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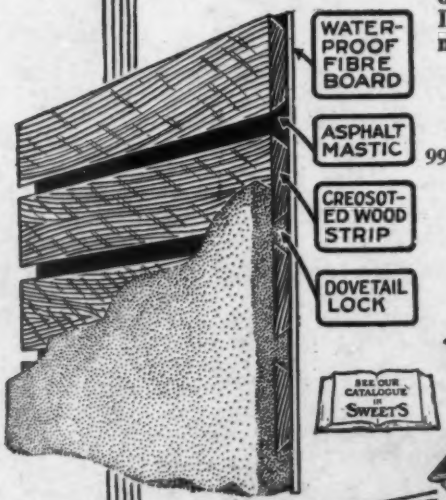

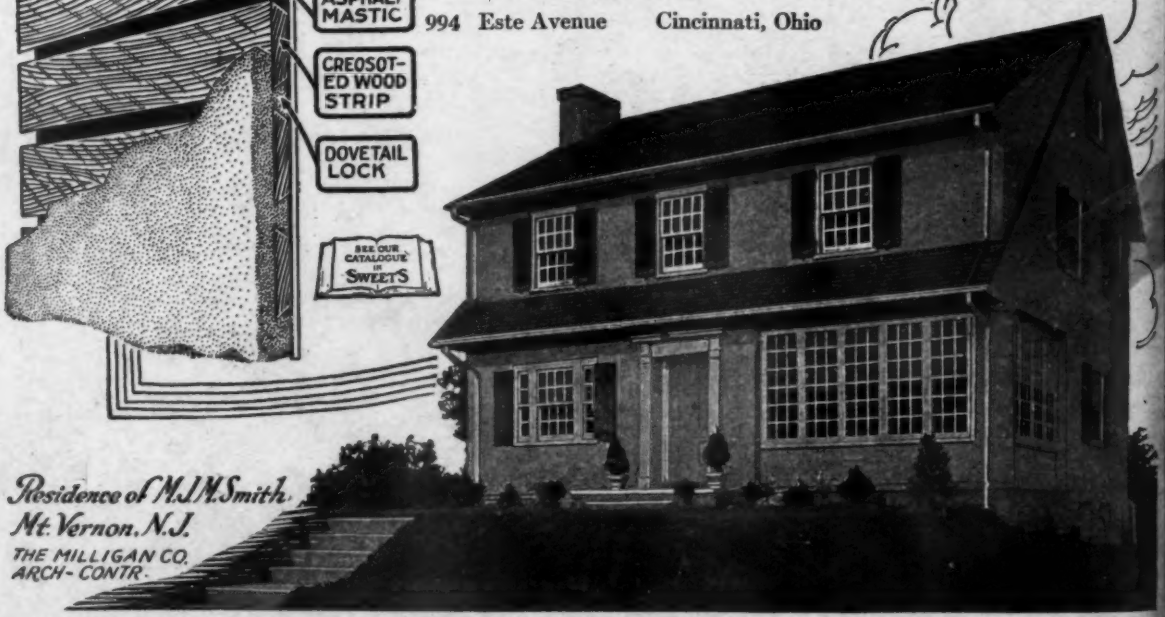

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THE AMERICAN ARCHITECT

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The Architect and the Post-War Committee

By GLENN BROWN, *F.A.I.A.*

WHEN a patient shows evidence of a collapse we see hurried and excited conferences of the family and friends. Doctors are hastily called in with their assistants and nurses. There is a spirit of nerve tension and eagerness for all to lend a helping hand. In reading the last proceedings, it would appear that the family of the Institute felt that the head of the house was suffering with a serious malady, the cause unknown.

They have called in a large staff of doctors, in the Post-War Committee, to diagnose the patient from head to heel, with X-rays of his circulation and digestive organs, with the hope of diagnosing some unknown disease with which they agree the patient is bedridden.

The case must be serious as they have taken from the household reserve fund ten thousand dollars for hospital expenses, and to secure the services of efficient nurses and doctors. The patient has been isolated and removed far from home for special treatment.

This is all the more startling when we are informed that the family is very poor, only eight architects out of a hundred being called on to pay an income tax. We are impressed with this condition when we remember that the doctors and nurses represented by the secretarial and editorial staff cost for ten years only ten thousand annually, when more than 50 per cent. of the architects would have paid under the present laws an income tax. While we appreciate the fact that it costs more to bolster up and cure the sick than it does to keep a well man in fit condition, the great cost emphasizes the dangerous character of the malady. The Post-War Committee, the doctors, lacking confidence in their power to diagnose the disease, are calling loudly to their assistance the architect, building craftsman and layman. The hope is expressed that by this diversity of opinion, assorted, added and divided by the number of opinions received, a happy mean will be reached which will clearly show the character of the illness and result in the recovery of the patient. My long experience, I feel, justifies me in examining the case as presented by the Post-War Committee, making a diagnosis and suggesting methods of treatment.

In their statement of progress for a year the Committee outlines their efforts. They have called to their assistance all the architectural societies of the world. They have sent out circulars and questionnaires to individuals and received suggestions. They have called to their aid the builders, the engineers and the laymen, as they doubt their own ability to locate the trouble. They state, and by reading the proceedings we see it to be a fact, that: "The last Convention of the American Institute of Architects was almost entirely devoted to a discussion * * * of the several subjects under which the Post-War Committee divided its program." The Committee, it appears to me, are acting unwisely in calling for help so loudly to outsiders before formulating a treatment and reaching a conclusion. It may even be that some of the outsiders called in may be callous and willing for the patient to die. The Committee publishes their preliminary conclusions, with comments by the editor of the Journal and at one time Secretary of the Executive Committee.

Their tentative conclusions were: "The Institute should do less and less toward dealing with the business activities of the profession and more toward the foundation of guiding principles which are universal to the profession."

This means going back to early Constitutions of the organization and depending more on the honor. dignity and justice of the individual architect than to many rules and regulations.

This pride in the honor of the architect, a cherished and sacred thing, guiding individuals and societies to the Golden Rule, was weakened by the guidance of rules to govern the relations between the architects themselves and between the architect and the client.

One case out of many that might be mentioned will illustrate the effect of such methods. D. H.

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Burnham, as I recollect the instance, had a corporation as a client, the management of which wished him to undertake a large piece of work because they had knowledge of his capacity and were assured of satisfactory service. As often occurs, others, with a friend on the board, wished to secure the job. The management to save trouble authorized a semi-competition. Now Burnham felt that this interference was illegitimate, and determined he would enter the competition, although from his interpretation of the rules of the Institute he was barred as a member. He took the straightforward course and resigned.

Burnham had an international reputation based on the great buildings he had erected; the great work he had accomplished at the Chicago Exposition and his breadth, force and capacity in the broad principles of design shown in great city plans. Few surpassed him in his unstinting efforts for the public good. Past President of the Society, organizer with McKim and others, and patron of the American Academy in Rome, his power and force were lost to the organization. The strangest feature of the case was divulged when the Investigating Committee reported that Burnham had misinterpreted the rules and had a perfect right under the regulations to act as he did. The decision was too late, as he felt no further interest in a society bound down by rules that were not even understandable.

I feel that the Post-War Committee would be justified in recommending the abrogation of many of the rules which have been added from time to time, becoming more and more entangled as they piled up; and in the simplification of the ones which remained, and in suggesting that the time of the Conventions be not devoted as they have so often been to endless discussions on the wording and meaning of detrimental rules. The time of the Conventions should be given to objects that are of the greatest practical public service and this in the end will redound to the benefit of the profession.

The other conclusions of the Committee all have a bearing upon the changes they think fundamental in the rules.

The first considers State societies and their freedom from Institute control. The Committee takes up the matter of State societies affiliated with the Institute as if it were a new question, when in fact it has been advocated and encouraged by the national body almost from its organization. And it has been tried by two States which have more than one chapter, and is in effect in twenty-one chapters whose territory of influence is bounded by State lines. It appears that by use of these State societies which are already in existence we might secure the most effective expansion. Have these State societies, whether chapters or a combination of chapters, failed in their purpose? And if so, why? I believe a careful investigation will find that it has been due largely to the rules and regulations by which they have been bound hand and foot. The earlier form of organization which allowed latitude in such societies appears to have been better. The old form was of sufficient elasticity to allow the young and inexperienced, the old and unqualified, the young draftsman and craftsman, and the layman interested in building to be members; and at the same time took in consideration local conditions, which we must acknowledge are not the same in all parts of the United States.

One of the fundamental errors of the Institute was made when it attempted to drive every member of the chapter, whether it had local or State territory, into the Institute, and bind its members with more rules and regulations, at the same time letting down the bars of Institute qualifications and driving from State organizations useful and in many cases efficient men, whom even the greatest latitude would not cover, into the national body.

Why this determined effort to lower the standards of the national body and disrupt the efficiency of the local organization? It was done to get more dues, so as to pay larger salaries and give increased traveling expenses for the officers of the Institute and the Journal.

The old way of chapters, having a membership from which it was their pride to see members advance as they became eligible to the Institute, was the better way. The pure metal in this way was brought to the top in the melting pot and made useful to the public. The practical plan would be to modify the rules for State societies or chapters, possibly making them even more liberal than they formerly were.

The next change recommended, "establishing definite permanent affiliations between all national organizations in the building industry."

Such affiliations may be advantageous or destructive. Advantageous if we secure their affiliation for useful ends, the good of the public; destructive if the affiliation is used, and there is always a tendency in that direction, for our or the affiliated society's personal advantage.

The third conclusion of "permanent relationship, with technical bodies * * * a permanent league of vocations."

If such "affiliation" or "relationship" bound us to accept and abide by regulations promulgated by bodies often diametrically opposed to our aims and ideals it would be binding us hand and foot, without a moral right to resist. It would be surrendering ourselves to a supercontrol, as the League of Nations without reservations would have surrendered our country. If we cannot organize our own associa-

tion on a sound, practical basis, do we not show our weakness when we call in others to show us the way? Are we not running the great risk of being destroyed in the process? There are several professions, like the engineers and the constructors, the new name we see applied to the builders and contractors, which have already begun the absorption of the architect; and are ready and willing, much I believe to the public detriment, to complete the process. If these "affiliations" and "relationships" are for the purpose of getting all we can for ourselves, "the public be damned," which, judging from their action, is the sole purpose of the various labor organizations, then we had better cease to exist as a profession. If these combinations are for the purpose of gaining strength for the public service in forwarding the fine arts, let us have the combinations.

If it is for educating the people in knowledge that the architect from his education and experience is the best man to plan, the best for securing grouping and arrangement for economy of space, the best for a combination of material for structural efficiency and harmony of proportion, best for design in combining buildings and landscape which add to the pleasure and culture of the community, the best to decorate the interior, to give charm and dignity to home life, and the best to obtain economical and efficient business management—if this is the intention let us have these combinations, but before binding ourselves to them let's be sure of our reservations against entangling alliances which may be our destruction and a loss to the public of our useful service.

The next conclusion is on our registration laws.

A topic ever occurring in the history of the Institute for the past forty years, based on protecting the public against unsafe and unhealthy structures. Such laws add little to the standard of the architect, although important for the public. As all who have striven and worked over these laws as I have know, they cannot prevent the jerry builder, the constructor or the owner building his house. It should not prevent capable structural engineers and construction companies who can build safely and well. It cannot prevent vulgar and meretricious designs from marring the city streets and country landscape.

There seems no way after years of trial to make a citizen employ an architect, as I fear these laws were intended to do, simply for the reason that his structure should add to the attractiveness and credit of his neighborhood. For this reason I believe license laws giving any one the legal right to erect a structure should not be confined to an architect, but to any one who can prove his ability to construct safely and sanely. Now here is where we might use the word constructor, be he architect, engineer, construction company or builder.

There are many grades of safe constructors.

1. Small buildings, wood, brick and stone, which include 75 per cent. of the work.

2. Reinforced concrete, skeleton steel; which covers a large percentage of business and apartment structures.

3. Massive structures that require great arches or great trusses, elaborate foundations, important but limited in number.

One man might be very capable in 1 and thoroughly unfit to undertake work in 2 and 3. Another might be capable in 2 and not be able to undertake 3, which would require the highest type of skill. To best protect the public the licenses should be for constructors in grades one, two and three. One man would be licensed to undertake a certain class of buildings, another certain other classes and so on as he had shown himself capable by an examination proving his fitness. The most capable man might be licensed for all grades. In this way the public would be assured of securing men capable from a structural standpoint of getting safe buildings. The young and inexperienced could start with the lower grade and advance as their knowledge and experience increased. The architect with the constructor's license would show the public that he could build safely. He should as he has done in previous generations prove that he can give them more than safe construction, that he can give them something that will be attractive to the stranger by enhancing the beauty of the exterior and its surroundings, a joy to his household and intimates by the charm of his interiors, both adding to money value of his property.

Again, we see a conclusion reached that might well have been passed twenty-five or thirty years ago in the statement in effect "we must have competitions for Federal and municipal buildings, but it is not advisable in the case of private owners. We consider the difficulties of the young man, but he must get his work in some other way. We deprecate offering sketch plans without remuneration." As we have had competitions certainly since the times of the Renaissance, I believe we will have them in some form or other until men as well as Nature cease to strive for the highest results. Although we deprecate them they are not an unmixed evil. An argument that appeals to many is that it gives the young man a chance—an argument which I believe would hardly be justified by facts. In looking back I can recall very few instances where the young man has secured his award by competition. The majority of competitions have been won by well equipped offices with men capable

of planning, designing and make attractive water color drawings. The few that I know who have won out on competitions are men I believe who would have come to the front without competition.

But competitions have been the means of enthusing draftsmen and architects, a means of study and education, from the lowest to the highest in the office, in this way benefiting hundreds in addition to the one who won the commission.

Architecture is not the only profession which puts its best into the sporting effort to secure something big and great, with the prospect of receiving no pecuniary remuneration if he loses. The lawyer with his fee contingent upon winning his case; again, expending his efforts to protect the weak from the strong. The preacher giving his life to the poor and the slums. The physician expending every fibre of his brain and nerves in fighting to save life—money or no money.

We will continue to have Federal and municipal and corporation competitions because of the divided interests of the client. The architect must use his best endeavors to see that they are conducted so that the combination of a capable man and the best plan and design wins.

The young man, as he has always done in the history of the world if he has the proper business capacity, talent and energy, will come to the front; only a small percentage can reach the top, but a large majority will reach midway the ladder.

The Post-War Committee appointed sub-committees on three phases of architectural education, the use of the architect's office in continuing the instruction and education in elementary schools. On the general subject I want to say a word.

The architects throughout the country might well enter into the elementary educational scheme by giving talks to the high schools throughout the country, letting the young people know something about buildings and something about architects. We might induce the technical high schools to introduce a course of mechanical and free-hand drawing for those who wish to study architecture, so they will be familiar while young with the manipulation of drawing instruments, pencil and brush. Education has been under consideration of the Institute for the past fifty years, studied by committees, conventions and individuals. It took part in the foundation of our early schools and has offered suggestions, many of which have been followed from that time. Personally I believe in broad culture for the architect, an equivalent to an A.B., in addition to his strictly architectural training. This, preferably taken in the school in connection with his architectural work. I believe strongly in the atelier system, under the control of a practicing architect, as exemplified in the atelier system inaugurated some years ago in Columbia University, New York, with McKim in charge of one, Hastings in charge of another and Van Pelt, I think, in charge of a third. In these ateliers we had enthusiasm, ambition, guided by the practicing architect, which I believe has not been equaled before or since.

I believe thoroughly in the boys working during the Summer in architects' offices and in the architect giving them practical problems other than tracing and drudgery. They should be taught materials and their strength and how to calculate strains and stresses. They should be made familiar with specifications and business methods. Architects in practice might well give their time to lectures before classes on the practical side of architecture. The more intimate the practicing architect becomes with the boy in the school the better for both.

The good results of personal contact are clearly shown in the men who came under the influence, first, of R. M. Hunt, like George B. Post, William R. Ware and Henry Van Brunt; second, of H. H. Richardson, with men like Charles F. McKim, Stanford White, T. W. Clark, Shepley, Rutan and Coolidge. So many were uplifted, encouraged and impressed with the highest ideals for the profession by that charming and remarkable man, William R Ware, that I cannot attempt to name them.

To have had the merest contact with the hypnotist, Charles F. McKim, or the enthusiastic idealist, Stanford White, was an inspiration leading to higher ideals and better work. It is interesting to remember some of the men at present in practice who came under their influence, among many others Cass Gilbert, Carrere and Hastings, W. A. Boring, Henry Bacon, York and Sawyer, Trowbridge and Livingstone, Lord and Hewlett.

In the next article I propose to suggest modifications of the Institute organization which I think would be beneficial.

Specification Clauses

By FRANCIS W. GRANT

V—PAYMENTS

PARTIAL payments shall be made to the contractor on or before the tenth day of each month during the progress of the work in amounts equal to 90 per cent of the value of the work and material actually performed and fixed in place during the preceding month, measured by the contract sum, as ascertained, computed and determined by the architect; subject to conditions named elsewhere herein relative to schedule of prices, liens, shop drawings and default of contractor.

The final payment shall be made only upon the written certificate of the architect that the structure and all appurtenances thereto are complete in accordance with the terms of this contract, and upon a satisfactory showing being made that all bills and claims of whatsoever nature incident to the performance of the contract have been fully paid; and that no lien attaches to or is obtainable against the premises. The final payment shall include the sums retained from the partial payments.

It is agreed that no payment except the final payment shall constitute or imply the acceptance of any portion of the work or material.

It is further agreed that the first partial payment hereunder shall not be due or payable, even though a certificate shall have been rendered therefor, until the contractor shall have negotiated and delivered to the architect a satisfactory surety bond as elsewhere herein provided.

Partial payments may be made (a) at stated periods of time and based upon the value of the work found by the architect to have been accomplished; (b) at times when the work shall have reached certain specified stages of advancement based upon the architect's computations as before; or (c) in stated sums at predetermined stages of advancement.

The former of these methods and the one contemplated by the above suggested clause is most generally adopted and is recommended as being most convenient and equitable.

The theory advanced for making the partial payments coincide with certain stages of the work instead of periodically is that it tends to expedite the work. As a matter of fact, however, the method of paying periodically in sums regulated by the diligence displayed by the contractor during comparatively brief periods of time tends far more to stimulate regular and continuous progress and besides has the merit above other methods of enabling the contractor to make and keep definite engagements with his creditors, whereas under either of the fixed-stage methods of payments some trifling circumstance, such as the non-delivery of a single column, may disarrange all the contractor's calculations and perhaps cast unfair reflections on his credit, and all this without compensating advantage accruing to the owner.

A further objection to the "fixed payment at fixed stage" method of making payments is the difficulty of accurately defining the several stages. A clause stating that a certain fixed amount shall be due when the walls have reached the level required for setting the first-story beams, for instance, is capable of widely differing interpretations as to what should be included. It might and it might not be ruled to include all areas, non-bearing basement partitions, underground pipes, etc.

Still another criticism applying to either of the two fixed-stage methods is that under these methods architects are very liable to expose their ignorance by fixing impracticable stages, and stages that compel an illogical sequence of operations.

It is sometimes provided that in addition to the placing of material and the performance of labor the contractor shall pay for the same before being entitled to partial payments. This could be accomplished by merely adding the words "and paid for" after the words "fixed in place" in the first paragraph of the clause above submitted. This procedure is not recommended, however, as it unnecessarily limits and defines the contractor's operations. His bond should be of such reliability as to satisfy the doubts that the showing of receipted bills is intended to overcome.

Whatever method of payment is specified must be literally observed in all its details throughout the life of the contract and never deviated from without the formal execution of supplemental contracts and the consent thereto of the sureties in each such instance if the contract is to be preserved in full force and effect. Informal changes in the method of payment are dangerous to the integrity of the contract. In some States, particularly in New York, a deviation from the exact terms of the contract as to payments renders liens for material and labor valid under circumstances which, had the terms of the contract been observed, would have been invalid.

Material merely delivered at the site and not actually incorporated in the building should under no circumstances be included in partial payments. Sometimes a concession is made in this matter out of consideration for the hardship endured by the contractor in having to wait on progress of other parts of the work while expensive material especially fabricated for a certain use has to lie idle.

It would be safer under such circumstances to treat the idle material as collateral for a loan to the contractor (if the material is his and paid for), but safer still and more business-like to let the contractor finance his own affairs unaided by the owner.

The percentage retained from partial payments should not be excessive. Ten per cent about represents the contractor's anticipated profits and is sufficient to cover probable error in computation of partial payments. It is as much as should be retained unless it be decided to dispense with a surety bond securing the faithful performance of the contract, in which event it might be well to make no partial payments at all.

In the case of large contracts, covering a considerable period of time in their performance, the sum retained from partial payments becomes so large as to constitute an expensive burden. An intelligent contractor will of course foresee this and include the expense for interest in his proposal, thereby placing the burden on the owner, where by right it belongs. Writers on this subject in recent periodical literature have suggested that contracts provide for some means of reducing the retained sum by a sliding scale as the time for completion approaches, or for payments in full for the value of work performed monthly after the sum retained aggregates a fund sufficient to serve its purpose.

For the benefit of those who see merit in diminishing the retained sum, the following is submitted as a suitable substitution for the first part of the paragraph under this caption:

> Partial payments based upon the work performed and material actually incorporated in the building up to the last day of each calendar month, measured by the contract sum, as ascertained, computed and determined by the architect, shall be made to the contractor on or before the fifth day of the next succeeding month, subject to conditions named elsewhere in this specification relative to schedule of prices, liens, samples, shop drawings and default, it being agreed that a sum equal to 10 per cent of the value of the work performed and material installed as so determined shall be deducted from the amount found due on each such partial payment period until the sum of such deductions shall equal 5 per cent of the entire contract sum. The sums retained from partial payments as herein provided shall not be deemed due and payable until completion of the contract.

It is commonly specified that partial payments shall be a certain major percentage of the value of the work performed at named periods of time. Literal observance of this method of computing the amounts due the contractor is liable, however, to result in over-payment. If the contractor bids a sum considerably less than actual cost and thereafter binds himself to performance for that sum he must give the owner the building for less than it is worth and his partial payments should be based on values less than actual in the same ratio. The words "measured by the contract sum" are used in the above suggested clause to cover this point.

It is entirely appropriate and proper to treat the subject of payments in the specifications, but their mention in more than one place in the specifications should be avoided. If a separate formal contract is used the subject of payments should be incorporated therein and not in the specifications, thus lessening the chance for error and contradiction; in such event, however, a copy of the proposed contract form should be bound with the specifications when given out to bidders that they may be fully conversant with the terms to be imposed.

The writer has recommended in other articles on this same general subject that all the several documents preceding execution of a contract be prepared on the assumption that no separate formal contract form is to be employed. Under such method of procedure the proposal and its acceptance takes care of the contract sum in gross, and the specifications gives all necessary detail as to payments.

The architect should not so write his specifications as to constitute himself an arbitrator of business relations between the contractor and his subcontractors. The owner should be placed in a position of security against unpaid claims of subcontractors by a surety bond and a financially responsible general contractor, and the architect should, under no circumstances, meddle in the business relations of the contractor and his subcontractors and material men by furnishing data, dictating payments, selecting workmen or otherwise, for by such course he burdens himself with responsibilities altogether without necessity. Such responsibilities are of a character difficult for most architects to handle creditably and to arbitrarily assume them is deemed by the writer inequitable to the general contractor.

The uniform documents of the American Institute of Architects propose just the opposite of this course. These even go so far as to provide that the architect shall furnish to the subcontractor on request information as to the amount included for work performed by the subcontractor in the partial payment certificates issued the general contractor. It is then further provided that this sum shall be paid by the contractor to the subcontractor promptly when due, stating at the same time when it shall be deemed due. Solicitude for the poor, helpless subcontractor does not end with this, for the Code then stipulates that this payment shall be made at that time even though the payment to the general contractor himself due at the same time is not paid.

Since mechanics' liens cannot attach public property, that portion of the payment clause providing

for the withholding of payments pending the discharge of liens should be omitted from specifications for public buildings

The statutory time within which liens may attach after completion of a building varies in the different States, but is generally from sixty to ninety days. If the final payment be withheld until the expiration of such lien limit period to safeguard against liens it would work hardship on contractors in many instances. It would in any event entail an expense for interest on the money thus made idle, which would naturally be included in bids and resulting contracts. If the final payment be not withheld during that period a very careful investigation must be made by the architect into the matter of possible unpaid claims at the time of final settlement.

Liens or lienable claims overlooked at the time of final settlement with the contractor generally involve vexatious legal procedure to clear title. The surety on the contractor's bond is of course liable if everything has been regular, but small irregularities are sufficient many times to discharge sureties from responsibility. The architect is cautioned in particular not to overlook the fact that if the contract requires that the contractor shall make a satisfactory showing that everything is paid for and no such showing was demanded, the surety can present the best of evidence of irregularity and probably escape liability, leaving the contractor's personal assets as sole recourse.

An excellent practice is to demand of the contractor an affidavit that all claims are paid, taking this is a "satisfactory showing" under the contract. Overlooked claims constitute a cause for criminal action instead of civil if the contractor gives such an affidavit. Following is a form for such affidavit that has proved excellent in practice:

AFFIDAVIT

State of.....)
County of .....)ss.

....., being duly sworn, on oath says, that he is the identical ..... under whose contract was ..... (constructed, altered or repaired).....at.....(give location) ..... for .....(give name of owner) ..... under the direction and supervision of ..... (give name of architect) .....; that all of the bills of every kind in connection with the said contract have been paid in full; that this affiant has been paid in full; that the contract has been in every manner completed, and nothing remains to be done in regard thereto.

This affidavit is made for the benefit of the owner, and the sureties on the bond of this affiant, and all others concerned.

.....

Subscribed and sworn to before me this..... day of .....19...

.....

Notary Public in and for the State of .....
residing at .....

To withhold a payment when due is an exceedingly dangerous proceeding. In the absence of some contract provision written in correct contemplation of delayed payments, the contractor may, if he so elect, treat the contract as abrogated the same day that a payment properly due is refused, and his sureties will also be released. Or the contractor may, in the case of payments specified to be made upon completion of specific portions of the work, without invalidating his contract, refuse to proceed beyond such point of completion until the payment earned has been paid. The withholding of payments for mere disciplinary effect is unbusinesslike and dangerous for the reasons set forth.

The following paragraph may be added to the payment clause to guard against abrogation of the contract in case of delayed payment:

> Omission or failure on the part of the owner to make any partial payment or payments at the time due as hereinabove provided shall not be held or deemed to vitiate, abrogate or void this contract, but in such event the contractor shall be entitled to interest on any such deferred payments at the rate of 10 per cent per annum for the time that the same shall remain unpaid after becoming due.

"On or before" a certain day of the month, as expressed in the suggested clause accompanying this article, is deemed preferable to "on or about" as expressed in the A. I. A. Standard Documents. The contractor is entitled to something absolutely definite on this very important matter.

The form in which certificates should issue for partial and final payments deserves the most careful consideration. In this connection attention is invited to the fact that the term "estimates" so frequently employed in referring to these documents is a misnomer. They are certificates based upon estimates: the architect's determination of an exact sum deduced from estimates and approximations of his own or perhaps of the contractor.

The certificate should be expressed in unequivocal language, as brief as possible, and never issued in duplicate. It should bear such summary or statement of account as will render it complete in itself, obviating all necessity for reference to previous certificates or to account books, by the contractor to whom it is issued or the owner on whom it is drawn, in arriving at a full understanding of the financial status of the contract at the time of its issue.

Extras and deductions should be treated, in the issuance of certificates for partial payments, as merged in the original contract and subject to all its terms as to partial payment and sums retained unless in their negotiations supplemental agreement to the contrary is specifically entered into in writing. Certificates in form and size resembling bank checks are most convenient and appropriate.

Art After the War

EVEN while the guns were demolishing villages and churning the land, men within the very sound of those guns were at work building. The whole countryside might be stricken as if with pestilence, but wherever military necessity demanded there ran through that worse than desert roads which men built under shell fire and then kept in repair. One of the inevitable results of war, visible even while war rages and inescapable as soon as war subsides, is this process of reconstruction.

After such a war as this, which is not yet technically at an end, the need of reconstruction extends beyond the region that shell fire could reach. In an interesting discussion of "Art After the War," a writer in the editorial pages of the *Outlook* states that those roads of France were symbols of men's minds. No one can read the literature produced in the trenches without realizing that just as men were busy reconstructing the highways across the devastated land, so men were busy building in their minds new paths for their thoughts to take the place of paths that had been obliterated by their war experiences. And just as the end of the war has released energy for the reconstruction of material things destroyed or displaced, so the end of the war has offered a new opportunity for the reconstruction of men's minds.

This which seems commonplace enough, and so obvious as scarcely to bear the saying of it, is, like many other obvious things, likely to be overlooked by those who are nearest to it and ought to see it most clearly. The age of reconstruction is distinctively the age of the artist. Primarily the artist is a builder, a creator. Whether the material he handles be pigment or clay or brick or imponderable sound, what he builds is ideas.

Indeed, there is nothing to-day so essential to the world as its art. Even the prophet and teacher of religion cannot avail unless he either has in him the creative power of the artist or can enlist that creative power in the service of the ideas he promulgates. The educator must be an artist, otherwise he will be simply a hearer of lessons or the keeper of a place of detention. The political leader must exercise the function of the artist if he would create new forms of law or of political action to meet the new situation. Whoever, in fact, is to have any creative part in reconstructing what the war has injured or replacing with something better what the war has destroyed, will succeed only to the degree to which he follows the laws and principles which it is the business of the artist to discover and in his product to reveal.

There still lurks in the minds of many Americans, undoubtedly, the idea that an artist is a sort of super-entertainer, and that art is a form of restful amusement. Pictures, from this point of view, exist to provide relaxation for the tired business man who has the money to buy them; music is a counter-irritant to the cares and worries of the day or a soporific for soothing overstimulated nerves. According to this view, there is no important distinction between good and bad art. If it amuses, relaxes, stimulates, or otherwise entertains and refreshes people, it is sufficiently good for its purpose.

There lurks, too, in the minds of many people who regard themselves as artists the idea that art is primarily for the self-satisfaction of the artist; that it is good to the degree that it expresses the emotion which the artist wants to express. Pictures, from this point of view, are but projections of whatever is in the soul or mind or nerves of the person who paints them. Music is the audible cry of the composer's spirit, whatever it may be. This idea of art ignores the interests of the tired business man, just as the business man's idea of art ignores the yearnings of the artist; but the two ideas have this in common—that the good or bad in art is a matter of comparative indifference. From neither point of view has the artist any need of a conscience or a standard.

In either of these senses art is a trivial thing. It is equally a silly luxury for the seeker of entertainment and for the person who imagines himself an artist because his emotions are too much for him. In a nation engaged in the serious business of finding order in the chaos that war has created and setting to rights the things that war has set askew, men with a sense of responsibility are rightly impatient with those who talk about art at such a time, if art is nothing more than a means of entertainment or a sort of emotional safety valve.

Art, however, is not a luxury; it is a necessity. It supplies to men the satisfaction of a craving as great as hunger or thirst. From time immemorial men have faced a world of chaos as we are facing it to-day. They have tried to think their way through the tangle, and those who have thought the most clearly they have hailed as their philosophers. They have groped their way to faith in an order underneath all this disorder, and those who have brought them the clearest light of faith they have hailed as their prophets. But men have not been satisfied, they never will be satisfied, with merely hearing about this order and beauty which

they are convinced exists somewhere. They want that order and beauty made real to them. They want it in a form that they can live with; and those among them who have taken out of this chaos and disorder material out of which they have built forms of beauty and order and truth they have hailed as artists. Whether it be a cathedral or a poem, whether it be a statue or a symphony, whatever creation of man embodies this conception of order in a way that gives lasting satisfaction to that craving for order, men have kept and cherished. And every epoch in history has supplied its own embodiment of this conception; for each generation of men in its turn has discovered chaos and disorder for itself and has therefore wanted its own disproof of what it has seen in its own ugly present.

To the very extent to which America needs to rebuild her mind after the war, to that extent she needs a pattern according to which she can build. This is no time for men capable of being artists to devote their gifts to the service of the tired business man or to the indulgence of their own emotional appetite. It is the time for the artist to be what he may be—the leader of a people through the wilderness to a promised land.

ST. STEPHEN'S CHURCH, WORCESTER, MASS.
JNO. WM. DONOHUE, *ARCHITECT*

ST. JOHN'S CHURCH, NORTHAMPTON, MASS.
JNO. WM. DONOHUE, *ARCHITECT*

Nationalization of Architectural Education

AS architecture is both a science and an art, the method of its teaching combines many and often very diverse things.

Education in any direction, to be successful, largely depends on the creation of interest in the mind of the student. This point was very carefully considered in an address by Paul Waterhouse before a recent meeting of the R. I. B. A. Mr. Waterhouse stated:

"However one defines education, one ultimately comes up against the word 'interest,' of which no definition is possible. The process of teaching is merely that of shortening the process of absorption by the pupil in two ways—first, by placing the facts to be absorbed within easy reach of the pupil; and, second, by stimulating his appetite for the facts."

How may this stimulation be best effected? That which will most stimulate interest, that will prepare the mind receptively to absorb and keep knowledge, will be the correct basis of all forms of education in architecture.

Architects in this country who have thoughtfully considered these important matters are in accord that there should be, and quickly, a radical revision of our present methods of technical education. They are equally in accord that the final decision as to what is best should be lodged with the men in active practice.

A basis of philosophy as far as it may be logically carried will assist in the formation of a basis of practicality. And it is such a basis we shall have to achieve before we can begin successfully to rear any fabric that will meet our rapidly changing conditions.

WHATEVER result there may be in the end reached will be by a correctly proportioned combination of both these elements, those whose every decision is reached by philosophical deduction and those who practically view everything they do. It will not be possible to eliminate the pedagogic element from these things, but it will and should be possible to curb its preponderance in the solution of what should largely be a practical question. Educational methods in architecture should be so strengthened and enlarged as to be representative of all of our national interests. This is strongly urged by Professor Waterhouse. Such forms of education will even before graduation expansively lead the student to contemplation of the broader and higher things that he will confront when he goes forth into the world.

It has been stated that education confined to a specific course at the outset breeds a narrow comprehension of every other outlying question. If this is true, methods of education should, as Professor Waterhouse urges, be so nationalized as to broaden to the fullest extent the architectural student and lead him toward the sure path to a future success.

Extending "Block Party" Methods

THE "Block Party," started among our alien population resident in East Side congested neighborhoods, has become developed by interested observers in more aristocratic circles, and, as embodying the essence of community relations, is being carried forward successfully in the "uptown districts." The latest of these organizations to attract attention by reason of its successful working is the "East Sixties Property Owners' Association," formed by a group of sixty or more property owners resident in blocks from Sixtieth to Sixty-second Streets, between Second and Third Avenues. The types of houses in these blocks, while less ornate than many of the more modern residences nearer Fifth Avenue, are, due to the fact that they are large occupied by their owners, as neat and at-

tractive as any residential blocks in the city. It is to maintain these conditions, to repel the invasion of the speculative builder who has so often destroyed the domestic atmosphere of similar localities, that this association has been formed. The essence of success is, of course, a perfect and liberal spirit of co-operation among the members. In the present instance this seems to have been achieved. There are other objects to be obtained by the successful operation of these organizations. Co-operative buying of coal and staple food necessities, the employment of community watchmen specially to care for the safety and tidiness of the section, tree planting, and the appointment of plumbers, carpenters and other craftsmen to serve the members, are among these objects.

A PROPOSED improvement that will interest architects is the intention to relieve the neighborhood of its architectural monotony and to create a distinctive or different aspect to the façades of the houses. It is amazing what may be economically and artistically carried forward in this direction, by simple changing of cornice heights, painting, the introduction of iron grills and window boxes, and the well-considered alteration of entrances.

There are at least two sections in New York City where Mr. Alfred Sterner, architect, has executed a transformation from a sordid, commonplace city block to one of absolute artistic charm. There is no excuse for the further existence of the deadly monotonous row of brownstone houses. If these block organizations work toward the elimination of these unsightly things and create in their place locations of houses of attractive and artistic aspect, they will not only have accomplished a good work to their own benefit, but have unselfishly added greatly to the satisfaction of every beholder.

Walled Towns

RALPH ADAMS CRAM is continuing the book habit. His most recent work, Walled Towns, is written to offer a solution of the difficulties that have arisen as a result of the war. Familiarity with Mr. Cram's attitude toward his profession and his strongly developed leaning toward an ecclesiastical aspect, restrains us from the somewhat unreasoning and adverse criticism indulged by critics who only know the architect through the pages of this book.

It may not be contended that Mr. Cram does not know his facts. It is, however, highly probable that many of his architectural readers will not thoroughly agree with his deductions. When, for example, Mr. Cram describes, with much accuracy and a fine command of words, an ideal mediæval walled town, he fails, it appears, to consider the many practical disadvantages those towns experienced. And when he draws a contrast with some congested area in our large cities, it is highly probable that he may be in error in attributing the most satisfactory conditions to the walled town.

His picture of an early New England village is one to dwell in the memory. His suggestion as to how all the advantages of these earlier Arcadias may to-day be obtained may, to most of his readers, appear largely impractical.

However, the whole work is delightfully entertaining, and every architect will read it with a sense of satisfaction as further evidence of the scholarly and thoughtful attitude of men in the profession.

VENICE—FROM THE ORIGINAL PAINTING BY R. BELLOTTO
(COURTESY OF M. KNOEDLER & CO.)

Criticism and Comment

The Editors, THE AMERICAN ARCHITECT:

The article on Architectural Engineering by Mr. Yardley, in the Jan. 7 issue of THE AMERICAN ARCHITECT, has proved very interesting, and should bring to its readers among the architects a clear realization of one of the elements in the practice of the profession which needs the most careful consideration of every practicing architect. The constantly changing conditions of construction, the advance in the development of mechanical equipment, and the more complicated living and working conditions are placing before the architect of to-day problems never dreamed of by the architects of two or three generations ago.

As a profession we must either recognize these changing conditions and the corresponding responsibilities which they force upon us, and in recognizing them, meet them in an intelligent honest way, or go down before a just criticism of not being able to deliver to the public the real service which the public has a right to expect and for which we receive our compensation.

The possibilities contained in the practice of architecture must appeal differently to the various individuals practicing. To some the only appeal is in the idealistic attributes of the profession. The maintenance of a business organization and engineering departments is not only distasteful, but considered by them as unethical and therefore unprofessional.

It is, however, the overemphasis of the idealistic attributes of the profession and the belittling of the business and materialistic side that has given the public the impression, merited to a certain extent, that the architect is a dreamer, not a practical doer, and has thereby undermined the public confidence. If the architects of this country are to maintain their position as master builders, a heritage that should not be lightly given up, we must realize that as a profession we must give complete, economic service to the owner.

If the architect is to be the master mind in the development of a project of any magnitude, he must be the creative mind, the dreamer who brings into being the design, the beauty, the thing that appeals and lives in the mind of the public; he must be the analytical mind who solves the economic problems, the disposition of space, selection of materials, economy of operation, etc.; he must be the controlling factor in the engineering problems of disposition of materials, methods of construction, selection and disposition of the mechanical features; he must administer all the financial responsibilities in a thoroughly businesslike manner. As the adviser of the owner, if the problem is one of a commercial nature, he must be able to advise on financial questions both of investment and operation. If the problem is industrial, he must be conversant with complete plant operations and efficient methods. In his own interests he must be a good salesman, not so much in selling his services to the public as in selling to his client the result of the serious honest study of the problem in hand, backed by real knowledge of the subjects involved. Without such salesmanship many a carefully studied scheme of real merit is upset by an owner's unstudied opinion and his lack of complete confidence.

The man who could embrace in himself all the foregoing qualifications would be a rare genius. Conditions indicate that the progressive office expecting to carry on a general practice cannot be a one man office, but must be an organization which is capable of rendering complete economic service to the owner. Such an organization can be worked out without the loss of the individuality which is so necessary to good work, and with a gain rather than a loss in the personal attention which it is possible to give to the client and his problem and which means so much in the way of future commissions.

In such organizations, rightly conducted, lies the hope for the young man, the future architect. The man starting in an individual practice to-day is, as soon as his practice requires engineering, faced with the necessity of either employing the services of structural, electrical, and mechanical engineers, which through lack of co-operation is often costly to the owner and disastrous to the architect; or the employment of engineering draughtsmen, which is liable to result in placing in the hands of men of comparatively little experience and immature judgment matters of great importance, involving large sums of money, and upon which the success or failure of the working out of the entire problem may depend—in the eyes of the owner. Many an architect has lost prestige through faulty ventilating systems or mechanical equipment in a building which in all other respects was almost above criticism.

Organization seems to afford the means of achieving the result desired in the surest, soundest way. By combining in one organization several architects of different temperaments and training, at least one of whom is an architectural engineer, as executive

heads, together with engineers at the heads of engineering corps of the various branches of engineering, as well as accounting and business departments, based on modern systems, it is possible to render architectural service of the type demanded by the exigencies of the times in an efficient, honest and creditable manner. Such organizations afford a training and an opportunity to the young man which cannot be gained in small individual practice. His individuality is not lost in the larger organization, but is given a greater opportunity to become recognized. Through such organizations the architect may remain the master builder, not afraid of losing his place in the community to the big construction organizations, nor need he be afraid of not being recognized and called upon in times of public need.

By honestly performing the service generally accredited to the profession, the future is secure. If we fear to appear too practical, and handle the commissions entrusted to us in an unbusinesslike, unprogressive way, we may expect to make way for those better fitted to perform our work. If we are master builders, let the conduct of our practice be so efficient as to merit our advice being sought on all problems relating to building. Let us take our place as experts and not only as dreamers. Let us be true to our profession.

LAWRENCE S. BELLMAN,
Mills, Rhines, Bellman & Nordhoff.

Toledo, Ohio.

The Editors, THE AMERICAN ARCHITECT:

Mr. Yardley, in THE AMERICAN ARCHITECT of Jan 7, brings out an article which should receive careful study by every university which teaches engineering or architecture.

Fourteen years ago the writer, while serving in the capacity of chief engineer for a structural iron concern, realized the inadequate engineering data in many architects' plans.

If this was so apparent along structural lines, which are generally conceded to be closely related to architecture, what must it be relative to the mechanical and electrical requirements of a modern building? After a thorough investigation it was evident that a so-called architectural engineer is as important in the architect's office as a general manager is to a factory. As Mr. Yardley stated, he must be a man with not only a thorough engineering knowledge, but a practical hard-headed and broad-minded business man. This is what is demanded of a manager of a factory. He may not be an expert in any particular department. This he leaves to his department foreman, who is selected by the manager. Just so with the architectural engineer. He is not expert with the details of a heating plant, or the column connections of a 12-story building, although he naturally detects any detail which is defective. He, however, selects competent engineers just as a factory manager selects foremen, and his general engineering knowledge governs the work.

In the construction of buildings it is not necessary to take a complete course in railroad curves, or why a motor should be wound with No. 12 instead of No. 14 wire. However, a course in engineering, embracing the fundamental principles of all classes of engineering, would be far-reaching in developing an architectural engineer.

In addition, three or four years of outside superintendence would give the student the necessary practical knowledge. After that, it becomes the question of ability and continuous study of building requirements.

O. N. MUELLER,
Vonnegut, Bohn & Mueller.

Indianapolis, Ind.

The Editors, THE AMERICAN ARCHITECT:

The article of Mr. Yardley, in THE AMERICAN ARCHITECT of Jan. 7, proved interesting both to our engineer, Mr. E. W. Stern, and to me. Unfortunately, we are both too busy to give sufficient time to the subject to comment constructively on the matter referred to, and no other form of criticism is worth anything.

Our recent experience has clearly confirmed his view that the structural engineer should be a part of the organization of the architect's office, working together with the other designers and side by side. He should not be an individual that is called in to put the structural "guts" into a building on which the design has been completed.

As for the editorial comment on the need of special training for architectural engineers, I am inclined to think that what is needed is a larger development of the fundamentals of both engineering and architectural education. I think the engineers will have to be taught more about architecture and the architects will have to be taught more about construction.

ROBERT D. KOHN.

New York.

Current News

Happenings and Comment in the Fields of Architecture and the Allied Arts

Foreign Trade Service

The first Foreign Trade Service devoting its exclusive attention to the construction industry has been organized by the National Federation of Construction Industries, and is now in active operation with general offices in the Drexel Building, Philadelphia.

The work is being carried on by the Foreign Trade Division under the direction of Dr. J. T. Duryea, President of the Pierce, Butler and Pierce Manufacturing Corporation of New York City, who is Chairman of the Federation's Foreign Trade Committee.

The list of Directors and Advisory Board of the Federation includes the names of many of the country's best known business and industrial leaders.

One of the aims of the Foreign Trade Committee is to discover where the real opportunities lie for world trade in construction materials and machinery, and to aid in determining the best means of developing them. For this purpose a special and intensive study of each branch of the industry in all parts of the world is being made, and reports are being prepared at the Federation's headquarters.

The Federation is actively co-operating with the Bureau of Foreign and Domestic Commerce at Washington, with the Chamber of Commerce of the United States, and with all Chambers of Commerce abroad and foreign Chambers of Commerce in this country. It is in touch with banks, leading export houses and shipping companies, and many other large interests both here and abroad. Through these channels, the National Federation of Construction Industries is constantly in receipt of numerous inquiries and requests for information from all parts of the world from parties interested in the purchase of American construction products or desiring to represent American construction interests abroad. These inquiries receive careful attention, and all available information regarding each is sent to members who are interested.

The Foreign Trade Committee is pushing the movement to do away with the haphazard growth of our export trade, and purposes to aid in the circularization of all information that will tend towards organization of the construction industry throughout the world on a sound economic basis and result in the interchange of construction materials, machinery and methods that natural conditions and national interests may dictate. It serves as a point of contact for many large construction interests of the United States and other countries; meets foreign visiting delegations and American business men recently returned from abroad, and obtains from them information regarding the construction industry in the fields they have just left. This information is compiled and distributed in the form of reports. The Committee aims to aid in bringing about a constantly increasing degree of co-operation between the construction interests of all parts of the world.

The Federation is at present securing figures designed to show the relative costs and time of erecting office structures and warehouses in New York City and in London. It is well known that British trade and industry are seriously hampered for lack of proper office space and working facilities. By graphically showing at what cost American building methods may be adopted abroad, it is believed that a way may be opened to overcome this difficulty and at the same time bring about a considerable demand for the erection of American buildings and equipment.

Dr. Duryea, who was a member of the Reconstruction Supplies Committee of the International Trade Conference at Atlantic City, plans consistently to broaden the activities of the Committee and intensify the work of the Foreign Trade Division.

Project for Making Paris Center

What is described as a project for making Paris the world's commercial center, just as it has been for centuries the artistic, literary and social center, is outlined in the *New York Herald* in an interview with M. Maurice Quentin, member of the Municipal Council from the First Arrondissement. M. Quentin says that the world market will be instituted within the next few months.

He has been one of the most persistent advocates of the idea of making Paris the center of the world's commercial transactions, and, with M. de Lavalle, a municipal councillor of the Seventh Arrondissement, has kept the matter continually before the Paris authorities. The support of numerous French producers and exporting organizations has been obtained, and, with the approval of the Municipal Council, M. Quentin believes that substantial progress can be attained and results assured which will make for a more rapid establishment of pre-war prosperity.

"We intend to commence with the development of a national market, principally for agricultural products, as France is essentially an agricultural nation," he said. "This was suggested before the war, when we found many obstacles confronting us, one of the most important being the existence of railway freight tariffs which made it cheaper to send French products direct to England than to send them to Paris for distribution. We also had to face the question of 'octroi' duties; but now these two important problems have been solved, and goods entering Paris for distribution and not for actual consumption in Paris will be subject to a refund of the 'octroi' duties.

"By reason of the peculiar divergence of French railways from Paris as a center, we shall be able to reship products from all parts of France without loss to the producer. With its present adequate commercial organizations, Paris should be able to make a strong appeal to buyers from all parts of the Continent, as well as to representatives of overseas commercial firms."

One of the first steps in the new project will be the creation of a permanent "Palais d'Agriculture," on the site of the old fortifications now being demolished at the Porte Maillot. This will consist of a series of buildings in which will be housed exhibits by leading producers of French foodstuffs, and buyers from all parts of the world, on visiting Paris, will be urged to inspect the "samples"

and to place their orders through the central marketing organization.

The original plans called for an expenditure of 20,000,000 fr., but the advance in the cost of building materials during the war will increase this outlay to nearly 60,000,000 fr., but even this outlay would be warranted, M. Quentin asserts, if France is enabled to attain the place in international commerce that the quality of her products warrants.

The idea has already been approved in the United States and it is understood that a "world market" for the benefit of American firms is to be instituted in New York next year. With the promised support of French trade generally, as well as the assured assistance of the Ministry of Commerce and the Municipal Council, it is believed that the French project will be on a substantial basis many months before the New York market.

High Cost of Wasting Water

The Department of Water Supply of New York City has inaugurated a campaign to reduce to a minimum the enormous waste of water caused by leaking fixtures and carelessness. Hundreds of millions of gallons of water are wasted annually, all of which can be saved by a little care and attention. The department calls attention to the fact that half a million leaky fixtures are within buildings in New York City; that one hundred million gallons of water are lost every day because of leaky fixtures, and that forty thousand tons of coal are used every year to pump this wasted water.

It is incumbent on every citizen, and especially every property owner, to see that leaky faucets are repaired; that care is taken to turn off water when not in use and to stop the practice of using running water in place of ice in the summer, and of letting water run to prevent the pipes from freezing in the winter.

Wasting water is one way to increase taxes.

Belgium Quarries During the War

Before the war the quarries of Belgium were among the largest and best equipped in all Europe, states *Stone*. Belgian marble, especially the famous "Belgian Black," has been widely used in this country, but the most important quarries were those producing granite, basalt, limestone, and cement stone. The Belgians were among the first to develop stone working machinery, and were the inventors of the wire saw. They early made use of electric power, and some of the largest plants were entirely electrified. The provinces, in the order of their importance in stone production, were Hainault, Liege, Namur, Brabant, Luxembourg and Limbourg. According to a report by M. Joseph Libert, Director-General of Mines, the value of the product of Belgian quarries dropped from more than 70,000,000 francs in 1913 to a little over 10,000,000 francs in 1917. In 1913, 34,893 workpeople were employed at quarries; this total fell to 8989 in 1915, but rose to 11,886 in the following year, to fall to 6055 in 1917.

Some of the quarries, such as those producing limestone, cement stone, paving stone and rubble, were requisitioned by the Germans and have been maintained in a productive condition. The granite quarries were practically idle, and upon their resumption is largely dependent the inception of building operations, etc. Improved transport facilities are urgently needed in this direction, many lines having been removed bodily, notably in the Condroz and Sprimont-Poulseur districts. The reopening of the quarries in the province of Luxembourg is also dependent upon a demand for the products. The output of plastic earths in the Ardenne basin has declined greatly during the war; as machinery is not largely employed in their production, they should be working at an early date in order to supply the needs of the zinc and glass works, etc.

Proposed Addition to New York Stock Exchange

To provide a sorely needed extension of floor space of the Stock Exchange a committee of members has acquired the Mortimer & Wilks Buildings on Wall Street, which occupy the entire frontage from Broad to New Streets. The Mortimer Building will be torn down and a twenty-story addition to the Exchange will be erected on the site at a cost of $3,000,000.

Trowbridge & Livingstone, architects of the addition, have designed the new Building, in harmony with the Stock Exchange Building proper, with a colonnade of Corinthian columns corresponding to those on the Broad Street façade.

Rare Works of Art Found in Unexpected Places

The recent discovery of a long-lost Raphael in an old curiosity shop in a Paris slum recalls many a story, no less dramatic, of treasure-trove in art, says *London Tit Bits*.

It is not long since a stolen canvas by Raphael of the "Holy Family" was found in the cottage of an Italian peasant, where it was serving the sordid purpose of stopping a broken window; a Correggio which had vanished from the walls of the Dresden gallery, and been lost sight of for generations, was recovered from the recesses of a Saxon hayloft; and priceless tapestries, designed by Raphael for Pope Leo X., were rescued from the hands of a Paris Jew after he had burnt two of the pieces in order to extract the gold and silver contained in their texture.

Raphael's pictures, indeed, seem to be peculiarly ill-fated. Only a few years ago his "La Belle Jardiniere" was picked up at a second hand shop in Paris for forty-four francs. His Vatican "Adam and Eve" was found flung aside in the corner of a picture dealer's shop in the Rue St. Lazare, by an artist who paid 100 francs for it, and sold it a few days later for 80,000.

For a modest fifty centimes a Parisian art amateur purchased Raphael's original design for his great picture "La Disputa del Sacramento," for which he would willingly have paid twenty thousand times as much.

More romantic still is the story of the great master's famous picture, "The Massacre of the Innocents," which recently was discovered in the cottage of a poor widow of Como. Originally owned by Cardinal Luigi d'Este, it had somehow come into the possession of a priest, who had paid the equivalent of a sovereign for it, and gave it to the Duke Alfonso d'Este more than three centuries ago. After the duke's death the canvas vanished utterly until it came so dramatically to light again in the Como cottage.

Rubens' famous masterpiece, "The Visitation," was, a few years ago, exchanged by a Paris curiosity dealer for two Louis XV. armchairs and a sixteenth century coffer.

A fortunate collector discovered among a number of canvases exhibited for sale by a secondhand dealer at

Montmarte one of Tenier's finest canvases, which he was able to purchase for thirty francs.

A portrait of Nell Gwyne by Sir Peter Lely was discovered in singular circumstances at Birmingham by a medical man. While attending a patient in a small tenement he noticed on the wall of the living room a tattered picture of the head and bust of a woman. The frame was worm eaten with age; but, despite its torn condition, the picture seemed a good one, and it was purchased by the doctor for a trifle. He took it away and ultimately sent it to be cleaned.

There was nothing on the canvas to indicate the artist's name, but the eyes of the subject bore that peculiar expression of tender languishment, blended sweetness and drowsiness attempted by no other painter than Lely.

The Comfortable Eskimo Home

The movement to modernize the Eskimo by providing him with concrete huts in place of his picturesque snow "igloos," as suggested by an official of the United States Bureau of Fisheries, would be the death of the denizen of the icy North, in the opinion of Vilhjalmur Stefansson, the Arctic explorer. Not only is the Eskimo as devoted to his age-long habitation as the South Sea Islanders are to their traditional garb of flower garlands and fresh smiles, but he is far healthier, warmer and more comfortable in his domed mansion of snow blocks than he could be in any modern house of concrete.

The statement that the natives of the Prybiloff Islands were about to discard their snow huts for modern concrete huts, finding the gales of the Behring sea too strong for the former, upon which the story of the intended change of Eskimo habits was based, Mr. Stefansson characterized as too silly for discussion. The explorer, talking at his headquarters at the National Geographical Society Building in New York, said that the Prybiloff Islanders had never lived in snow, but in wooden, huts and that further north, where the natives do live in snow houses, it would be next to impossible to convert them to any other dwelling.

"Their igloo serves as a home for two or three weeks. Then they build a new one. Because it is new it is clean and sanitary. It is as warm and comfortable as your library. A candle gives as much illumination as three electric lights, because of the intense whiteness of the snow. The snow-house will stand under any conditions. In all, the igloo is as comfortable a home as a man could wish.

"The concrete hut, like the wooden hut, must be uncomfortable and insanitary. Wherever the natives have changed from the snow to the wooden home there has followed pneumonia and typhoid and a tremendous increase in the death rate."

Personals

Rolland C. Buckley, architect, has established an office at 412 Essex Building, Minneapolis. Mr. Buckley, who was formerly a member of the firm of Buckley & Prins, Minneapolis, architects, spent over eighteen months in government service, being first stationed at Ft. Snelling as Director of Military Relief and later transferred to the Aviation School Bureau Camp Service. His former partner, E. Paul Prins, is now associated with the architectural firm of Brown & Fraser, 445 Security Building, Minneapolis.

Herbert Spielman, architect, formerly a member of the firm of Samuel Hannaford & Sons, Cincinnati, Ohio, announces that he has withdrawn from this organization and is now engaged in individual practice of his profession, with offices in the Mercantile Library Building, Cincinnati. Catalogues, samples and price lists of building materials and supplies are desired.

A new firm has been established in Portland, Oregon, in the combination of Jamieson Parker, formerly with A. E. Doyle, and Folger Johnson, who before its dissolution by his entering war service was a member of the firm of Johnson & Mayer. The offices of Johnson & Parker are in the United States Bank Building, Portland.

O. L. Grimes and R. L. Jungling have opened an office for the practice of architecture and general engineering under the name of Grimes & Jungling, architects and engineers, Room 1207, Fullerton Building, St. Louis, Mo., and would like to receive catalogues and samples.

Flournoy G. Hagan has opened an office in the First National Bank Building, Paris, Ky., for the practice of architectural and structural engineering, the title of the firm to remain Wm. K. Hagan & Son. Catalogues and samples are requested.

Gordon Laidlow Smith, Cincinnati, O., recently returned from overseas service as Lieutenant of Engineers, and has opened an office for architectural practice at 341 Volunteer Building, Chattanooga, Tenn. Samples and catalogues are desired.

George R. Callis, Jr., architect, who before the war was located at 55 Knickerbocker Building, Baltimore, Md., has opened an office at 611 American Building, Baltimore. He also retains his office at Melvin avenue, Catonsville, Ind.

James E. Casale, architect, announces the removal of his office from 569 Fifth Avenue to temporary offices at 128 East Twenty-eighth Street. After May 1 Mr. Casale will be permanently located at 73 East Fifty-second Street.

Dillon, McLellan & Beadel, architects, announce that Arthur Dillon has finished his work on the Federal Division of Rehabilitation and has resumed practice at 149 Broadway, the Singer Building, New York.

Mrs. John Wallace Riddle, architect, has been retained by the Women's Roosevelt Memorial Association to prepare the plans for the restoration of Theodore Roosevelt's birthplace, 28 East Twentieth Street.

Fitch H. Haskell has retired from the firm of Godley & Sedgwick. The business will be continued as heretofore by Frederick A. Godley and Henry R. Sedgwick at 244 Madison Avenue, New York.

Guilbert & Betelle, architects, announce the removal of their offices on February 1 to new quarters in the Aldine Building, 546 Broad Street, Newark, N. J. Entrance: 2 Lombardy Street.

Wm. S. Worrall, Jr., architect, announces that he has moved his office from the Queensborough Building to 132 Fourth Street, corner of Jackson Avenue, Long Island City, L. I.

George Lawrence & Co., masons and general contractors, have moved from 9 Pleasant Place to 1412 Herkimer Street, Brooklyn.

Alfred C. Bossom announces that he has removed his architectural offices from 366 Fifth Avenue to 680 Fifth Avenue.

Louis Stone, formerly of Stone & Wright, Stockton, has opened an office in the Albany Block, Oakland, Cal.

Cass Gilbert was recently elected president of the National Institute of Arts and Letters.

News Notes From Various Sources

The New York State Association of Architects has appointed the following Legislative Committee for the year 1920: Thomas F. Gleason, chairman, Albany; John H. Scheier, N. Y. C.; Alexander Selkirk, Albany; Robert North, Buffalo; Edward Loth, Troy; Edward S. Gordon, Rochester; Frederick H. Gouge, Ithaca; Gordon Wright, Syracuse; Harry Haskell, Elmira; Carl C. Tallman, Auburn; Harry R. Tiffany, Binghamton, and Addison F. Lansing, Watertown. A meeting of the committee has been called in the Albany Club, 102 State street, Albany, to confer with the State Board for the Registration of Architects, for the purpose of discussing the law and its proposed amendment.

* * *

Fifty thousand dollars, it was recently reported, will be the capitalization of the Housing Corporation of Harrisburg, Pa., Chamber of Commerce. The corporation will enable prospective homeseekers, who do not have the money to build or buy outright, to secure suitable homes on easy terms.

At least $25,000 of the capital stock has already been subscribed. It has been decided that the earnings of the capital are not to exceed six per cent.

* * *

The public playground and athletic field which was presented to the City of New York by Mrs. Isaac L. Rice and family will probably be placed in Pelham Bay Park in the Bronx instead of in Central Park, as was first suggested. Herts & Robertson, architects for the Rice family, appeared before the Board of Estimate and stated that the new location was adjacent to salt water and therefore would be advantageous for swimming pools and aquatic sports.

* * *

A plan of contemplating an equal division of net profits or net losses annually between the company and its 1200 employees and containing provisions by which the workers may take over control of the business was announced today by Winship, Boit & Co., owners of the Harvard Knitting Mills, engaged in underwear manufacture at Wakefield, Mass. The employees, who in recent years have received an annual bonus of 15 per cent, agreed to accept the plan.

* * *

Stout denial that farmers of the country were in favor of the Government retaining control of the railroads was made by Oscar E. Bradfute, president of the Ohio Farm Bureau Federation, who was a member of President Wilson's first industrial conference.

Mr. Bradfute said the only farmers' organization associated with the American Federation of Labor is the Farmers' Equity Association of the Northwest.

* * *

Problems relating to increased production through shop industrial training and the questions of arbitration, conciliation and collective bargaining were discussed at the twentieth annual meeting of the National Civic Federation. That labor is opposed to compulsory arbitration and will resent any attempt to interfere with the right to strike was the view taken by Samuel Gompers.

* * *

The Harvard Corporation announces an increase of 20 per cent in salaries of all members of the teaching staff except those in the law school and the graduate school of business administration. In these two schools the salary basis is considerably higher than in other departments of the university. The increase is retroactive to January 1 last.

* * *

Payments of $5,100,815 to pensioners of the steel industry since 1911 are recorded in the ninth annual report of the United States Steel and Carnegie Pension Fund. The average age of pensioners is 65.6 years, their average period of service 30.32 years and the average monthly pension $21.55. Active pensioners on January 1 were 2940.

* * *

Building of new homes to solve the house famine and the expansion of business are being retarded because the administration insists on keeping building material at the bottom of the preferred list for car accommodation, according to the Dow service daily building reports.

* * *

An important part of the proceeds of the new French loan will be applied to the retirement of paper in circulation. This will be one of the essential features of the Government's plan to improve the financial situation of France, the Associated Press is able to say.

* * *

Judge Gary announces:

"The wage rates of day labor at the manufacturing plants of the Steel Corporation have been increased about 10 per cent, to become effective February 1. Other rates will be equitably adjusted."

* * *

Republican members of the House Ways and Means Committee in conference agreed informally to favor legislation authorizing the Treasury to extend additional credits of $50,000,000 to certain European countries for food relief.

* * *

War powers of the Government have been reinvoked for the commandeering of 72,500 tons of open hearth steel rails for use by the Railroad Administration in building up steel rail stocks of the railroads.

* * *

A conference of Scandinavian Cabinet Ministers will be held early in February at Christiania.

The question of Norway, Sweden, and Denmark joining the League of Nations is to be considered.

* * *

"We are sliding down the scale on which the German mark and the Austrian crown occupy the lowest degrees, the Russian ruble being reckoned as zero," says "L'Echo de Paris."

* * *

The number of unemployed persons in Berlin at the end of the war was 62,000. The following year the total rose to 187,300, but in January of this year it fell again to 59,000.

* * *

By a vote of 75 to 24, the House appropriated $1,000,000 to guard the liquor in the 800-odd bonded warehouses in this country, amounting to 69,000,000 gallons.

* * *

Approximately 5000 acres of public land on the Shoshone, Wyoming, irrigation project will be opened to entry March 13, Secretary Lane announced.

* * *

An extensive survey of living costs in the principal cities of the country will be started by the Department of Labor.

Weekly Review of Construction Field

Comment on General Conditions of Economics With Reports of Special Correspondents in Prominent Regional Centers

The Farmer's Relation to Our National Well-Being

TO get down at once to first principles, man must be supplied with food before he can indulge in the cultivation of his loftier ambitions. Without physical life, mental processes cease to exist. Without physical sustenance, the body dies and there is, as far as those of the earth now know, nothing more to build upon. In the large, therefore, and with our ever-increasing population, it is necessary that food production be proportionately augmented, and to augment food production means at the same time to increase the power and well-being of the farmer.

When one reflects on the vast extent to which we are dependent upon the good will and the good work of the farmers, it is amazing that matters pertaining to farm life should be permitted to drift in the placid stream of indifference. There has been developed an attitude among city folk that farm life is a primitive kind of existence and one so different from what industrial workers know, as to merit, apparently, apathy if not actual scorn. This is, on the face of it, absurd, and it is only through a narrow outlook and a misinterpretation of facts that such beliefs have been able to take root.

If this country is to thrive and be the sturdy, vital power that we see in our visions, it is not enough that it shall not be hungry. Its food must nourish and its resources must be conserved. This means that every possible facility and encouragement must be given to the farmer, that immense group of citizens who are at the very source of our strength and well-being as a nation.

At the present time there is a conspicuous shortage of farm labor, and a consequent diminution in food production in many of the Eastern States. Farmers state that they contemplate leaving their farms or curtailing the acreage under cultivation because of the labor scarcity in these rural districts. One farmer sees nothing for it but to "raise only what we need for our own use and let the other fellows look out for themselves." Farm help has been lured to the city by the promise of short hours, high wages and the hope of a good time.

Meantime it is reported that Chicago is filling in Lake Michigan for miles and that New York is pouring millions of tons of soil into the East River, the purpose in both instances being to provide more space for the constantly increasing population of each of these great cities. If there is reason to doubt this, it nevertheless serves to emphasize the fact that there are too many people in these and other large cities, while there are not enough in the rural sections of the United States. Throughout the country is a great acreage of untilled land the cultivation of which would feed millions of people. This land lies idle while these millions of people eke out a bare existence, and the cry is always for more foodstuffs.

The best thing to induce a general and genuine back-to-the-farm movement would be an active and continuous betterment of the farm with reference to facilities for convenience and comfort in the daily life of the farmer. There is nothing inherent in the land where farms now are to prevent the installation of such comfort-giving things as are to be found in larger communities. Those who look sneeringly upon the mental stature of the farmer may note with consternation that the farmer is giving up his homestead and moving to the city, prompted by that same mentality. Unless something is done this country may be faced with the necessity of importing foodstuffs and wasting the very power that has made for our present national strength.

One of the suggestions made will have a wider influence than would at first be apparent: The American Land Service points out that there are thousands of young men and women seasonal workers, such as teachers, students and those employed in various trades, whose vacation periods dovetail with the agricultural seasons. The busy season in the country is in Summer: in the city, Summer is the slack season, the organization points out.

It is planned to take these workers to the country in units. They will be housed in a large house or camp in the center of farming districts, and will be delivered to the various farms in the morning by motor truck. They will be gathered up the same way in the evening. The day's work will be limited to eight hours, except in case of emergency.

The organization calls attention to the fact that the efficiency of city workers on farms was demonstrated during the war. Hundreds of them learned then the advantage of a few weeks' outdoor life in the country.

The important point here is not even mentioned. The gain lies not so much in the temporary relief that these people will afford, but it does lie in the intercommunity of interests that may logically be expected to arise. There will almost inevitably result a mutual respect and understanding, and the city people will doubtless avail of the opportunity to introduce such aspects of city life as may be adaptable to farm conditions and conducive to the greater comfort of those affected.

Another idea suggests itself. It is well recognized that most of the immigrant labor entering this country stagnates in the large Eastern port cities, and, while not having any preconceived preference for one locality over another, is simply dumped by the shipping companies on an over-supplied market. It would be too Utopian to expect these companies to carry the immigrants further West, but it would undoubtedly be an interesting experiment to make it one of the conditions of citizenship to serve an apprenticeship of, say, two years, on a farm or in a district of a certain small maximum population. To do this would, however, require the close co-operation of the Government, for if it directs people where to live it should in a sense assume responsibility for providing the details. With all the ramifications that this presents, there are few things

more important to be done on a large scale such as the Government might do. There are certain things to be said for the scheme despite the obstacles suggested and despite the obloquy attaching to Government performance.

These immigrants, who congregate in overcrowded sections of large cities, are most of them from the peasant classes of Europe and would be more contented in the free out-of-doors than hampered as they now are by the limitations of the unaccustomed slum house.

With such a plan in progress the rise of anarchistic propaganda is greatly reduced. Conditions are more tolerable. Men are placed where there is demand for just the service they are qualified to give, and are eliminated from circles where their presence is ungraciously tolerated for lack of a closer analysis of the problem and action thereon. It is likely that once so settled the foreign laborer will be slow to filter into larger cities. He will more likely get his brethren on the other side to join him in his rural quarters. Then, with a manageable number of foreigners in a comfortably appointed community, the problem of Americanization will be infinitely simpler of solution than the present undistributed masses of immigrants, in their unspeakable quarters, can permit.

With the benefits of increased farm labor, the scattering of our overcrowded centers, and a closer Americanization of incoming foreigners, together with all the corollary benefits, such a procedure as that suggested is not to be despised.

The foundation of our industrial organization harks back in the last analysis to the farm and its products. If these could be adjusted, other difficulties would inevitably diminish, and if in the carrying forward of this end there could also be accomplished a scattering of overcrowded people from their present centers, benefits would be doubled all along the line.

There cannot be too much reiteration on the subject of the importance of the farmer and the necessity for making his environment as attractive as possible. A group of Middle Western architects have sponsored a movement for beter farm buildings, but it is necessary for everybody to do some hard thinking on this topic. Better farm buildings mean increased production; increased production means reduced prices; reduced prices mean stability and prosperity in the ranks and files of the citizenry. Does it therefore not seem that to achieve these ends there should be a well-directed and earnest effort, a long pull and a strong pull on the part of architects?

Increased Production Convention

Seeing in increased production a means of restoring normal business and price conditions, the Chamber of Commerce of the United States will make its eighth annual meeting, to be held at Atlantic City April 2 and 29, an "Increased Production Convention."

This subject is considered of such importance that in working out a program for the meeting every topic will be considered from this viewpoint. Lack of production is one of the chief causes of the high cost of living and costs cannot be reduced until more goods are put on the market. The present is a seller's and not a buyer's market. Prices have been forced up by competitive bidding. This in turn has made necessary unusual wage increases, with a still further rise in manufacturing and production costs.

The general subject of increased production has been divided up in the program for the convention into subjects. The first to be taken up will be the Government in relation to production. Under this heading will be considered anti-trust legislation and taxation. Business of every kind is keenly interested at this time in the situation with respect to taxation, especially in the subject of excess profits taxes, against which there has been general complaint.

The second general subject to be taken up will be transportation in relation to production. This will include both land and water transportation. One of the chief causes of low production just now, as The American Architect has frequently pointed out, is the general shortage of railroad equipment. One authority estimates that the country is short at least 200,000 box cars, and all lines of industry have felt that shortage.

International finance and its relation to world production has a prominent place on the program. This subject will be discussed both from the financier's and the business man's point of view. Lack of means of financing European industries is a decided factor in retarding production in many of the countries of Europe.

One general session of the convention will be given over to agriculture in relation to production. Here will be presented for discussion the part of the Government, the farmer and the business man in agriculture.

Another important general subject will be the relation of labor to production. This will be approached from the two sides: the employe's viewpoint being presented by a representative of the American Federation of Labor and the employer's by a business man.

Besides the general sessions there will be held group meetings, divided as along the great divisions of industry. In these meetings the subject of increased production will be the main topic discussed.

Too much emphasis cannot be laid upon a subject so important to the welfare of our country.

Credit Expansion or Production

In its review of current economic conditions, the National City Bank of New York says: "The question of credit expansion is directly related to industrial costs and to the endless cycle of wage and price advances. The cycle calls continually for more credit, and if the supply is to be provided indefinitely the 'dollar' in which wages are paid will continue to depreciate in purchasing power, and the whole industrial and financial situation will become more and more hopelessly confused. It would seem that we have gone far enough in this direction for everybody to see that there is nothing to be gained for honest industry by going farther. There is no advantage to the wage-earner in reducing the currency of the United States to mere stage money, which has no definite command over the goods he wants to buy, or in having the industrial structure lifted up on a vast pyramid of credit which will sooner or later collapse as all like pyramids have in the past.

"When this is understood it will be seen that a resolute stand must be made against increasing the volume of loans, compelling such a restriction of new undertakings and such a lowering of costs as will enable the business of the country to be done without further credit expansion. If the people will set themselves to increasing production and paying their debts the whole situation will rapidly improve, but there is no prospect for easier money except as this policy is pursued and the price level lowered."

The Story of Limestone

Its Transition From the Quarries in Indiana to Placement in the Completed Building

By GEORGE BANGS MCGRATH

ARCHITECTS and builders as well as laymen fall into the easy habit of considering as commonplace many of the standard products employed in building construction. All too often they little know the story which lies behind the origin and production processes which bring the material to market. Now and then there is a touch of Nature's wonderful hand hidden in the things which the builder employs, and frequently it is also found that man has done his part exceedingly well.

A prominent contractor who has used limestone from Indiana quarries in his building operations for a quarter of a century was asked if there was plenty more stone where that came from. He looked up in surprise and said:

"I am sure I don't know. I never thought of that."

And when he was told that the deposit of such

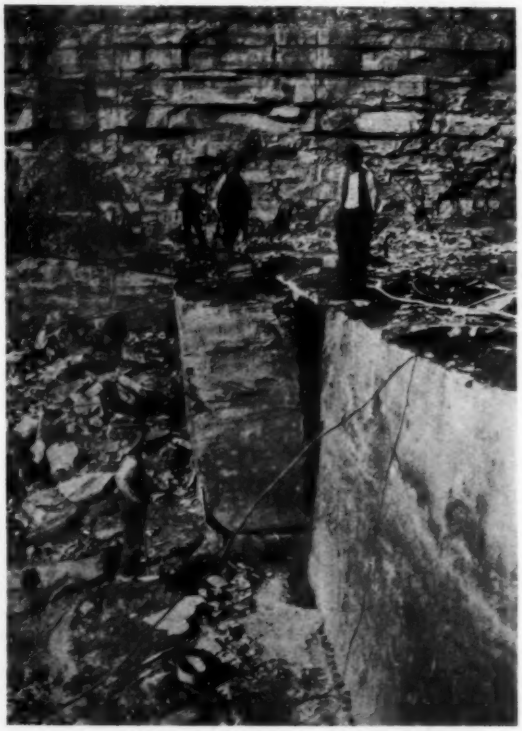
HYDRAULIC STRIPPING IN QUARRY

TYPICAL LIMESTONE QUARRY SCENE. QUARRY AT BEDFORD, INDIANA. STEAM CHANNELERS AT WORK

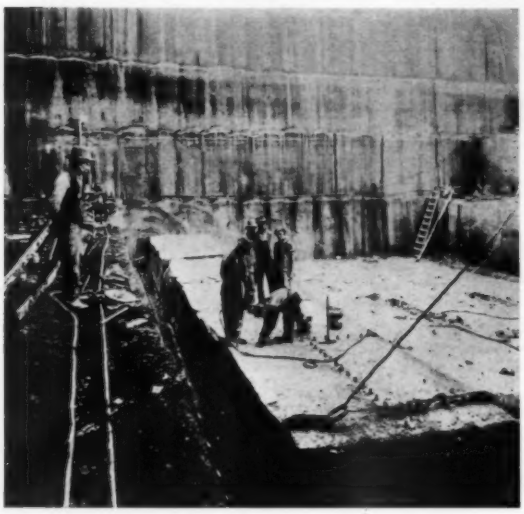
stone which has been utilized for building purposes for upward of a quarter of a century constituted a solid sheet 60 miles long, 20 miles wide and 80 feet thick, equivalent to something like eighteen billion tons, his surprise was great. Further surprise was manifested when the information was advanced that in some years 30,000 carloads had been shipped, making in the aggregate a train 250 miles long, carrying a load of two billion and forty million pounds, approximating 12,000,000 cubic feet in bulk.

The mechanical processes which produce the stone, from the solid sheets in the quarries to the regularly shaped rectangular blocks preparatory to milling, and that fabricate and fashion it ready for its place in the building, seem little known to architects and builders in general. That stone exists which is capable of ready response to sawing, milling and shaping operations by modern mechanical appliances is a revelation to many. Great progress has been made in mechanical methods of operation and some of these processes of production will here be briefly explained and illustrated.

Considering quarrying operations, the over-burden is removed or "stripped" by hydraulic pressure as shown in one of the illustrations. The stream of water is directed so as to undermine the earth sections. The rock sections are drilled and lightly blasted away, steam shovels transfering the debris.



TURNING OVER "CUT" IN QUARRY AFTER BEING CUT OR CHANNELLED BY CHOPPING OR CHANNELING MACHINE



QUARRY SCENE. BREAKING OUT TWELVE-TON RECTANGULAR BLOCKS OF LIMESTONE

The sheet or "floor" of limestone proper is then cut or channeled into strips by power channeling or chopping machines which cut a narrow and deep channel through the stone. A "key block" is first removed on the principle of extracting a plug from a watermelon and the blocks quarried until a face is secured, when a long channeled section is turned on its side by use of steel wire cables operated from large derricks, after which movement the section is drilled and broken into mill blocks ready for rais-

ing from the quarry pit to the freight cars above, for transportation to the local mills or to the sawing and fabricating mills of the cut stone trade throughout the United States and Canada.

Some of the blocks are roughed off or "scabbled" to square them into regular shape and save freight charges to distant points on excess material. This work is done on power scabbling machines especially designed for this purpose.

At the sawing mills the blocks are sawn in various ways. The gang saws, consisting of a series of steel blades which ride an abrasive consisting of Ottawa sand and water, are probably the most popular and maintain an average cut of about six inches per hour. Wire band saws are sometimes used for sawing blocks into extra thick slabs.

The diamond drag saw is used for making fast single cuts. The cutting teeth are set with commercial black diamonds and water free of sand is used. These saws obtain a cutting speed of from 30 to 40 inches per hour.

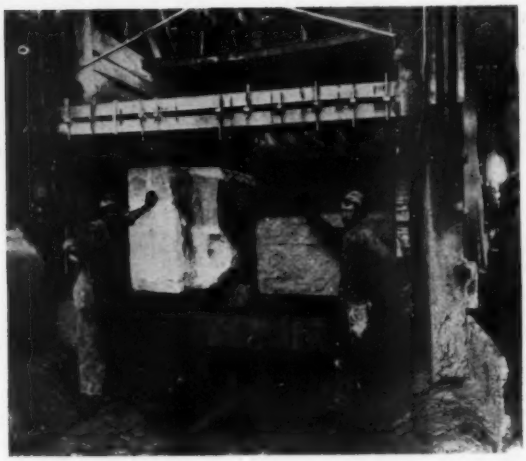
The circular diamond saw is employed largely for end cuts or jointing and is a wonderfully efficient piece of mechanism, standing about 6 feet 6 inches in diameter, with cutting teeth of black diamonds. This saw, traveling at an average speed of two miles per minute, actually cuts its way through the solid stone at an average rate of from 6 to 8 inches per minute.

It is in the planing, turning and milling of the stone that many unusual operations are performed considering that it is natural stone and not wood that the tools treat.

INTERIOR OF MILL, SHOWING PLANER BATTERY

Finely membered mouldings are produced on the planers, the steel cutting tools of which stand still, the stone being braced on platens which travel at the rate of from 25 to 30 feet per minute against the stone, with a reverse speed about double that. On a majority of the planers both top and side tools can be utilized simultaneously, and some of the larger machines carry two platens, producing two mouldings and using four cutting tools at the same time.

An unique invention is the circular planer devised for cutting circular mouldings.

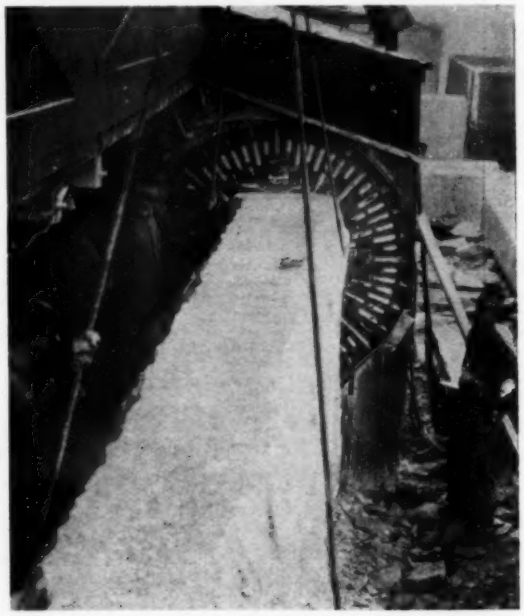


VIEW OF STONE GANG-SAW. ON THE GRATING ABOVE IS PLACED OTTAWA SAND, USED AS AN ABRASIVE, THE SAWS NOT BEING PROVIDED WITH TEETH

Turning lathes of various sizes are employed, from the little fellow engaged in turning out small balusters to his giant brother credited with monolithic columns over 33 feet in height and of proportional girth. Column bases, balls and the like are also turned on the lathes and the bases shaped by a powerful cutting machine termed a "header," which moves against the stone to be treated.

Small circular carborundum saws are used to some extent and, while limited in size and much smaller than the circular diamond saws, still find their valuable place in the economy of the modern stone mill.

While it is possible to produce Indiana limestone from its resting place in Nature's own laboratory and install it in the building, performing all operations by machinery, it should not be assumed that the stone cutter as an artisan and the carver as an artist have been altogether replaced by tools which mind the somewhat mysterious power of electricity and steam. Both the cutter and the carver enjoy their rightful place in the industry and both perform functions beyond the ken of any machine, although both these operatives in a majority of instances employ successfully an air-driven tool which succeeds the old hand mallet. Of late there has been something of a revival of hand-cut finishes which highly complement the economy and efficiency of the modern mechanical devices and promise here and there to add something more of "the affectionate touch



PLACING STONE IN LATHE FROM WHICH MONOLITHIC COLUMN IS TO BE TURNED

CARVING PILASTER CAPITOL. CARVER IS USING AIR-HAMMER

of the hand of man" to the nation's architecture in stone.

Stone was undoubtedly the building material furnished by Nature of which man first made use. When the various "Ages" marking man's civilization were named, we find the "Stone Age" as the earliest. And Nature has so abundantly supplied man with this durable material of construction that, although quarries have been opened and worked down through the ages, there still remains sufficient in store to supply his needs through centuries yet to come. Let us treat this ancient material with respect; let us build well with it, that the future may view our work with satisfaction.

Fire Protection for Schools

Part III—Means of Egress

By H. W. Forster

THE fatuous faith of the majority of school authorities and laymen in the life-saving power of outside fire escapes is a constant source of wonder and pain to the student of fire protection for schools. Some escapes are wide and properly railed; the stairs have an easy pitch; access to them is direct; they lead to the ground; they are located opposite blank walls or pass windows protected with metal frames and wired glass; they are a valuable means of egress if used. The large majority of fire escapes, however, are a delusion; they may prove death-traps. Narrow, steep, reached by climbing over window sills, terminating many feet from the ground, passing windows out of which flames are likely to pour, never used at times of drill, they are a monument to the ignorance of the authorities and the selling ability of the manufacturers. An outside fire escape on a school building is generally an admission of the inadequacy of normal exit facilities.

A one-story school, such as that shown in Figure 4, has ideal egress facilities. No group life loss is possible under such conditions. The conditions in the Collinwood School, shown in Figure 5, where 175 lives were lost, were similar to the present situation in thousands of our schools. Each school problem needs careful study to the end that adequate egress facilities may be provided and that these facilities may be promptly and intelligently used.

Building construction, height, enclosure of stairs and provision of automatic sprinklers all have a bearing on the amount of stair capacity that a building requires. The preliminary report of the Committee on Safety to Life of the National Fire Protection Association, to be found in the 1919 Proceedings, is the forerunner of an ultimate practical plan for adjusting the egress requirements to the building with due regard to its structural and protective conditions.

Fundamentals of Good Egress.—It should be possible to empty a school building of ordinary height and ordinary construction in not more than three minutes; two are preferable. Elements that need consideration are:

(a) An alarm system for prompt notification of fire or of drill.

(b) Proper individual room aisles to admit of quick marshaling of children.

(c) Adequate door or doors to corridors, to inside stairs directly, to other rooms, or to outside towers or escapes.

(d) Sufficiently wide, straight, unobstructed corridors.

(e) Stairs ample as regards number and of proper width, handrails, preferably enclosures,

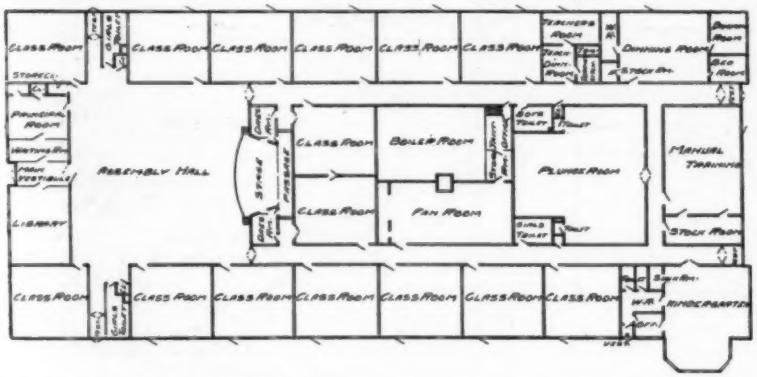


FIG. 4. PLAN OF A SINGLE STORY SCHOOL, ROCHESTER, NEW YORK. EDWIN S. GORDON, ARCHITECT TO THE SCHOOL BOARD

THE FEATURES OF THIS BUILDING ARE:

TWO WAYS OF EXIT FROM EVERY ROOM; IN MOST CASES DOORS OPEN DIRECTLY TO TO THE OUTSIDE. THERE ARE NO STAIRS TO CLIMB; NO VERTICAL FLUES TO ADD TO RAPID SPREAD OF FIRE AND NO OUTSIDE FIRE ESCAPES TO CREATE A FALSE IDEA OF SAFETY.

THIS TYPE OF SCHOOL HOUSE IS NOW GENERALLY CONCEDED TO BE THE SAFEST WHICH CAN BE ERECTED.

and separation to protect against smoke blocking all stairs.

(f) Direct exit from stairs to outside, without forcing pupils to enter lower halls.

(g) Special egress facilities for auditorium, gymnasiums, lecture rooms, and other points where large numbers of persons congregate.

(h) Carefully planned and frequently held egress drills.

It should be borne in mind that in many cases school houses serve the purpose of community centers and are used for public meetings.

Alarm Systems.—All school buildings, with the possible exception of small one-story structures, should be provided with a dependable means for giving prompt alarm at time of fire. In small buildings of more than one story a vertical rod from basement to top floor, provided with an operating handle at each floor and connected to one or more large gongs, will answer. In larger and more complicated buildings, however, it is necessary to use electrical systems. Gongs should be so located that they can be heard plainly in every portion of the building, and one signal station for every twelve rooms is a fair standard, although this will, of course, be varied according to arrangement.

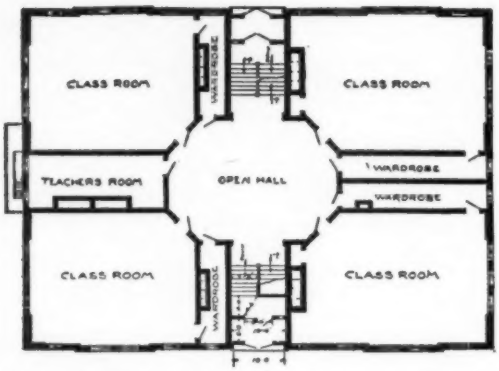


FIG. 5. LAKEVIEW SCHOOL, COLLINWOOD, OHIO. FIRST FLOOR PLAN FROM THE FRONT. COMPARE MEASUREMENTS AND ARRANGEMENT OF VESTIBULE, WHERE 173 CHILDREN PERISHED, WITH CONDITIONS IN YOUR COMMUNITY

Thermostats.—Approved thermostatic (automatic) fire alarm systems operate on a moderately rapid increase in temperature. Such systems are similar in action to an automatic sprinkler system, but lack the extinguishing feature. Probably for this reason their installation has been limited to cases where there has been a keen interest in fire protection, but where funds were not available for the installation of automatic sprinkler systems.

Sprinkler Alarms.—Where automatic sprinkler systems are installed fire alarms can be automatically given by means of a water flow alarm valve connected to gongs throughout the building. This is probably the most efficient fire alarm system devised, as the starting of the fire, operation of sprinkler head to extinguish it and the sounding of alarm are almost simultaneous.

Individual Room Exits.—In the opinion of many good judges, all class rooms, laboratories, etc., should preferably have two exits, one leading to the corridor or to an inside stairway directly, and the other to a similar stairway, a fire tower, an outside escape, or an adjoining room from which a second means of egress can be reached. On the other hand, some are inclined to think that the single exit in buildings of good construction has an advantage from the viewpoint of maintaining discipline in time of panic.

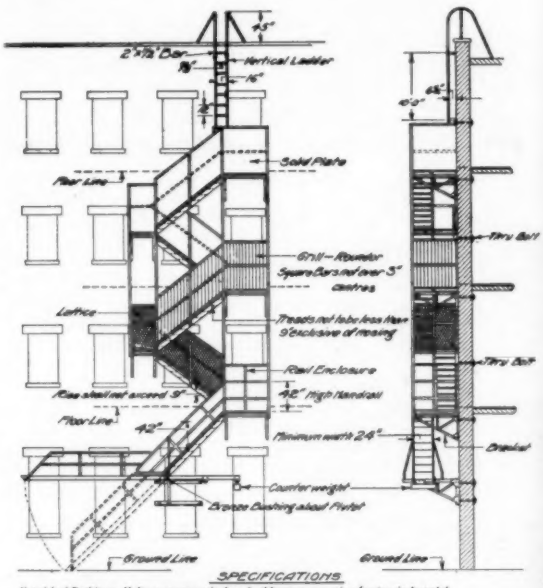
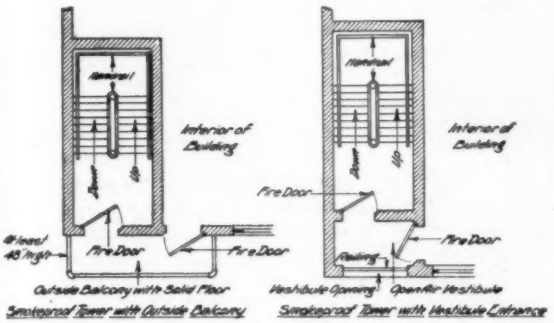

2"x12" Bar
Vertical Ladder
Solid Plate
Floor Line
Grill—Rounder Square Bars not over 5" centres
Lattice
Roof Enclosure
42" High Handrail
Floor Line
42"
Minimum width 24"
Counter weight
Bronze Bushing about Pivot
Ground Line
Ground Line
SPECIFICATIONS
Height of Building—Not recommended on buildings over six stories in height.
Location—Stairs should preferably be against blank wall, access from all openings to stairs being by horizontal balconies. Wall openings within 10' of such stairs to be protected by approved automatic fire doors under ways and automatic or fixed fire windows on window openings.
Doors—Shall have minimum width of 30" and minimum clear height of 78".
Balcony and Stair Enclosures—Shall be at least 50" between railings on superimposed form and at least 36" in straight run stairs.
Stairs—Minimum clear unobstructed width shall be 24". The pitch of stationary and of swinging stair (when down) shall not exceed 45°.

FIG. 6. STANDARD OUTSIDE STAIRS AS RECOMMENDED BY NATIONAL FIRE PROTECTION ASSOCIATION

In many cities portable one-room school units are in use, and these frequently are provided with but one exit, which is generally used to connect them to the main building. A separate outside exit should be provided.

School basements, especially where basement rooms are used as class rooms, should have exits leading directly to the outside.

Corridors.—One acceptable rule regarding corridor widths is 8 feet for a building having eight



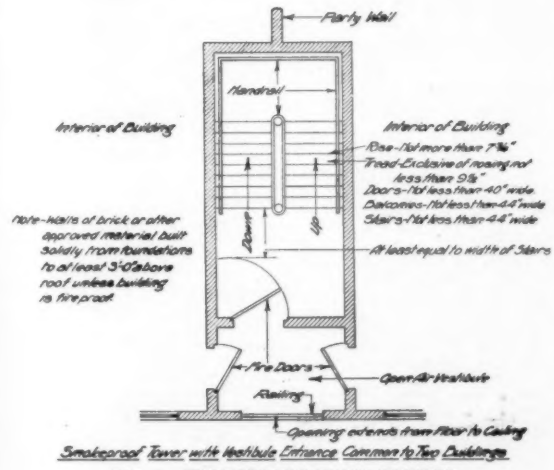


FIG. 7. SMOKEPROOF STAIR TOWERS

class rooms on a floor, and one foot more or less for every two rooms above or below this figure. The corridors should not terminate in dead ends.

Stairways should preferably be located at all turns or ends of corridors. Sloping floors or ramps should be avoided where possible and, if necessary, their pitch should not exceed one foot in eight.

All openings which subject corridors to serious exposure, such as windows overlooking combustible roofs or doors communicating with laboratories, wood-working rooms and other hazardous places, should be protected by wired glass in metal sash or by fire doors.

Larger Meeting Rooms.—The necessity of adequate means of egress from auditoriums, gymnasiums, lecture rooms, laboratories, or other places of general assembly is evident. Where not located on the ground floor, there ordinarily should be separate exits leading directly to the outside. Doors should open outward and be kept clear of chairs and other objects.

Number of Stairways

The stairway arrangement of every school, old or new, should meet the fundamental rule of at least two ways of egress being available from any class or assembly room. The arrangements should be such that there is only a remote chance of both exits being cut off by smoke or fire at the same time. The more common arrangement, of course, is to have two stairs connected with the same corridor into which, in turn, all rooms open. If two such stairs are fairly close together, they cannot be properly considered separate means of egress unless enclosed in fire-resistive or fire-retarding partitions equipped with smoke-proof doors.

Account must be taken of the possibility of one stairway at least being blocked by fire or smoke, the other or others being called on to provide adequate egress under those conditions.

It is commonly assumed that a standard 4-foot or 5-foot inside stair will pass in drill formation 120 pupils per minute, or 60 in each of the two lines. To be conservative, this figure should be reduced to about 45 per minute per file past a given point.

Stairway Construction. — Measured between handrails, the width of stairways should never be less than 3 feet and never more than 5 feet unless intermediate handrails are provided. In new construction the best practice is to have the stairs 4 feet wide. Stairways should preferably be incombustible, and should be kept absolutely free from obstruction.

The stairway plan should be simple, and stairs should be of uniform width throughout their length. Winding stairs should never be permitted.

Handrails.—Handrails should be provided at both sides of all stairways and also at intermediate points where more than one double column of pupils is to be accommodated. Ends of rails should be curved to prevent pupils running into them. Balustrades should be at least 3 feet high.

Fire Escapes.—Adequate exit in new buildings should preferably be secured without resorting to fire escapes. On many existing buildings, how-

FIG. 8. BRICK AND WOOD-JOISTED SCHOOL BUILDING. SAME PLAN AND COST AS BUILDING SHOWN IN FIG. 9. INTERIOR CONSTRUCTION OF WOOD, WOODEN CORNICES AND CEILINGS OF STAMPED METAL.

ever, fire escapes are necessary because of the inadequacy of the inside stairways.

Fire escape stairways should extend to the ground. Where for any reason it is not possible to continue the stair to the ground, a counterbalanced section is necessary as shown in Fig. 6.

Smokeproof Towers.—The Philadelphia Fire Tower in its various modifications provides the safest means yet devised of egress from upper floors of buildings. The stairway is cut off from the building by fire walls and fire doors, making it impossible for either smoke or flames to enter the tower. (See Figure 7.)

Such towers can serve every normal stairway need in all save extremely cold climates. Scores of schools in North Carolina have only smokeproof tower stairs.

Doors and Gates.—Had the one bolted door of the pair of doors at the foot of the Collinwood School stairs been open, the children might have passed through to safety. All doors provided should be adequate for the number of occupants and, with the possible exception of individual classroom doors and doors on fire walls, should swing with the travel. Doors should never be bolted during school hours except by means of approved panic bolts.

Gates should be avoided wherever possible. If absolutely necessary, they should be locked open during school hours.

Horizontal Egress.—In planning new school buildings of large area, these should be sub-divided by one or more approved fire walls. Even in old buildings it is occasionally advantageous to install such walls. Sometimes existing walls can be improved to serve this purpose. Where buildings are thus sub-divided the first concern at time of fire should be to get the children through the fire wall out of the section in which the fire is located and into the section which is safe.

Signs and Lighting.—Red and white exit signs, with letters at least 5 inches high and illuminated at night, should be placed over all stairways and doors leading directly to the outside. Exit signs should not be omitted over doors leading from roofs and basements. Secondary egress signs for classrooms, auditoriums, laboratories, etc., may be advisable in large schools.

In order to simplify instructions, all stairways and outside exit doors can be numbered and these numbers used for drill and other purposes.

The current for exit lights should preferably be obtained from a system separate from that ordinarily used for lighting purposes. It is also well to provide auxiliary gas lights for use in case the electric service is interrupted.

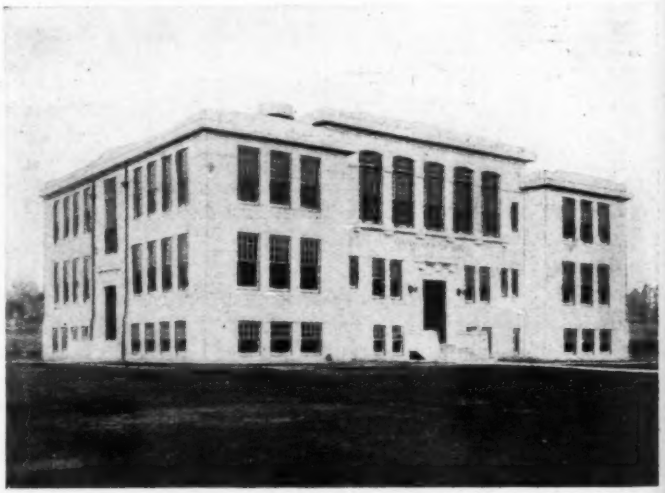
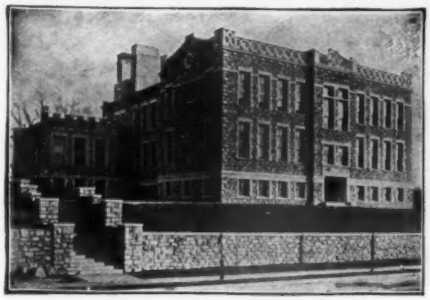


FIG. 9. REINFORCED CONCRETE SCHOOL BUILDING. NOTHING TO BURN IN CONSTRUCTION; MAINTENANCE COSTS AT A MINIMUM; DEPRECIATION NEGLIGIBLE



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PEN ARGYL PENNSYLVANIA

Late Quotations in Building Material Markets

(Price quotations now current on building materials and supplies as quoted by dealers and jobbers for delivery in New York, Chicago, San Francisco, Seattle, and Birmingham follow. The quotations set forth are placed before readers of THE AMERICAN ARCHITECT to afford an accurate review of market conditions, rather than for use as a basis for actual purchase. They will not only provide knowledge of the exact state of the market as to items quoted, but will also present a basis to judge conditions as affecting correlating materials.)

	New York	Chicago	San Francisco	Seattle	Birmingham
BRICK					
Common	$30.45	$14.00	$16.00	$20.00	$28.00
Face brick	55.00 to 60.00	30.00 to 40.00	50.00 to 55.00	70.00	45.00
BURNED CLAY (Delivered on Job)					
Block partition:					
3 in., per sq. ft.	0.13	0.10	.....	0.10½	.....
4 in., per sq. ft.	0.15	0.11	.....	0.10	.....
Wall coping (single slant):					
8 in., per lin. ft.	0.16	0.22	.....	.....	0.22
12 in., per ft.	0.26½	0.33	.....	.....	0.32
18 in., per ft.	0.54	0.66	.....	.....	0.52
(Corners and angles four times the price of one foot of coping the same size)					
CEMENT					
Per bbl. in 15-cent bags (rebate 60 cents per bbl. for bags)	3.40	3.25	3.63	4.25	4.50
FINISHED IRON AND STEEL (Mill Shipments)					
Bar iron, refined grade	.....	.....	.....	.....	.....
Bar iron, double refined	.....	.....	.....	.....	.....
Soft steel bars	2.62 to 4.52	.....	.....	.....	4.00
Shapes	2.72 to 4.27	.....	.....	.....	.....
GLASS (Discounts from Manufacturer's Price Lists)					
Single strength, A quality, first three brackets	75%	77%	.....	.....	.....
Single strength, B quality	75%	77%	.....	83%	.....
Double strength, A quality	77%	79%	.....	83%	.....
Double strength, B quality	79%	79%	.....	.....	.....
GYPSUM					
Plaster board:					
27x28x1	.....	.....	.....	.....	.....
27x48x ½	0.45	.....	.....	.....	.....
32x36x ¼	0.28	0.24	.....	.....	0.40
32x36x ⅜	0.29	0.26	.....	0.36	.....
32x36x ½	0.35	.....	.....	.....	.....
Plaster blocks:					
2 in. solid, 12x30, per sq. ft.	0.13	0.12	.....	.....	.....
3 in. hollow, 12x30, per sq. ft.	0.13	0.12	.....	.....	.....
4 in. hollow, 12x30, per sq. ft.	0.14	0.13½	.....	.....	.....
6 in. hollow, 12x30, per sq. ft.	0.21¾	0.20	.....	.....	.....
HOLLOW TILE					
2x 8x12 partitions, per 1,000 sq. ft.	98.80-111.10	.....	80.00	.....	.....
3x12x12 partitions, per 1,000 sq. ft.	148.20-165.10	110.00	108.00	105.00	112.00
4x12x12 partitions, per 1,000 sq. ft.	166.70-185.70	118.00	125.00	120.00	126.00
6x12x12 partitions, per 1,000 sq. ft.	222.30-247.60	162.20	154.50	170.00	168.00
8x12x12 partitions, per 1,000 sq. ft.	.....	221.10	222.50	230.00	224.00
10x12x12 partitions, per 1,000 sq. ft.	.....	272.70	276.00	.....	.....
12x12x12 partitions, per 1,000 sq. ft.	.....	316.90	.....	.....	.....
2x12x12 split furring, per 1,000 sq. ft.	92.60-103.20	73.80	108.00	.....	.....
LATH					
Eastern spruce, per thousand	18.00 to 20.00	17.00 to 18.00	20.00	14.50	.....
No. 1 white pine, per thousand	15.00 to 18.00	17.00 to 18.00	20.00	.....	.....
No. 1 hemlock, per thousand	15.00 to 18.00	17.00 to 18.00	20.00	15.00	.....
No. 1 yellow pine, per thousand	15.00 to 18.00	16.00 to 18.00	20.00	.....	20.00
LIME					
Common, 200 lb. bbls., per bbl.	3.80	1.75	.....	2.85	2.50
Finishing, 300 lb. bbls., per bbl.	19.50	20.00	.....	3.00	2.50
Hydrated, in paper bags, per ton	4.00	.....	.....	25.00	2.50
LUMBER (Retail Prices per Thousand Delivered)					
Yellow pine, No. 1 boards, 1x6	80.00	95.00	.....	.....	120.00
Yellow pine, B, and better flooring (plain)	130.00	135.00	.....	.....	130.00
Douglas fir, 6x6 to 12x12	80.00	77.00	56.60	36.00	.....
Oak, quartered, 1 in., F. A. S.	325.00	370.00	500.00	.....	.....
Oak, plain, 1 in., F. A. S.	225.00	260.00	320.00	.....	2.70
Oak flooring, ¾ quartered, white	220.00	370.00	470.00	.....	.....
Maple, 1 in., F. A. S.	180.00	185.00	270.00	.....	.....
Maple flooring, ¾ clear	175.00	225.00	225.00	.....	.....
Mahogany, 1 in., F. A. S.	.....	400.00	500.00	.....	.....
Spruce, 10 in.	85.00	80 to 140	96.00	.....	.....
Cypress, 1 in., F. A. S.	150.00	150.00	.....	.....	.....
METAL LATH					
Under 100 sq. yd., per sq. yd	0.40	.....	.....	0.42	0.42

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Late Quotations in Building Material Markets—*Continued*

	New York	Chicago	San Francisco	Seattle	Birmingham
PIPE					
Cast iron:					
6 in. and heavier	$67.30	$72.00	.....	.....	$66.00
4 in.	73.30	75.80	.....	.....	.....
3 in.	.....	82.80	.....	.....	.....
(And $2 additional for Class A and gas pipe)					
(Discounts to jobbers for carload lots on the Pittsburgh basing card; freight rates from Pittsburgh to New York, and also from Pittsburgh to Chicago, in carloads, per 100 lbs., are 27c. An additional 5 per cent discount is allowed to large jobbing interests over those listed below.)					
	F.O.B. Pittsburgh Butt Weld	F.O.B. Chicago			
Wrought:					
Steel:					
Black, ⅛ to 3 in.	47 to 54 %	38 to 45.1%	.....	.....	.....
Galv., ⅛ to 3 in.	20½ to 41½%	10.1 to 30.1%	.....	.....	.....
Iron:					
Black, ⅛ to 1½ in.	34½%	11.9 to 22.6%	.....	.....	.....
Galv., ⅛ to 1½ in.	+25 to 18½%	+39.9 to 4.6%	.....	.....	.....
	Lap Weld				
Steel:					
Black, 2½ to 6 in.	50 %	41.1%	.....	.....	.....
Galv., 2½ to 6 in.	37½%	27.1%	.....	.....	.....
Iron:					
Black, 2½ to 6 in.	30½%	18 %	.....	.....	.....
Galv., 2½ to 6 in.	17½%	3.6%	.....	.....	.....
PLASTER					
Neat wall cement in 15-cent bags, per ton	23.50	20.00	$18.50 to 20.00	24.50	24.00
Finishing plaster	25.00	20.50	19.50 to 21.00	26.00	24.00
Lath mortar, in cloth bags, per ton	16.50	.....	.....	.....	.....
RADIATION					
Discount from list on standard heights	45%	41 to 42%	.....	41%	44.45%
REINFORCING BARS					
High carbon steel from mill	48.50	.....	4.50 to 5.50	45.00	.....
Medium steel from mill	48.50	.....	4.50 to 5.50	45.00	4.50
ROOFING MATERIAL					
Tarred felt paper:					
No. 1—25 lbs. to 100 sq. ft., per ton	81.00	90.00	.....	120.00	.....
No. 2—16 lbs. to 100 sq. ft., per ton	81.25	90.00	.....	110.00	.....
No. 3—12 lbs. to 100 sq. ft., per ton	81.63	90.00	.....	100.00	.....
Rosin sized sheathing, per ton	75.00	.....	.....	110.00	.....
Corrugated roofing, galvanized, 2½ in. corrugation, over flat sheets, per 100 lbs.	0.30	.....	.....	.....	.....
SHINGLES					
Red cedar, 5 to 2, clear, per thousand	15.00	10.00	16.00	7.25	.....
White cedar, extra star, A star, per thousand	16.00	9.50	17.00	.....	.....
SLATE ROOFING					
	F.O.B. Cars Quarry Station				
Pennsylvania:					
Best Bangor	$7.75 to $9.00	.....	.....	.....	.....	9.00 to 18.00
No. 1 Bangor Ribbon	6.75 to 7.00	.....	.....	.....	.....	.....
Pen Argyl	6.50 to 7.25	.....	.....	.....	.....	.....
Peach Bottom	10.50 to 12.50	.....	.....	.....	.....	.....
No. 1 Chapman	6.25 to 7.25	.....	.....	.....	.....	.....
Vermont:					
No. 1 Sea Green	4.25 to 6.75	.....	.....	.....	.....	27.00
Unfading Green	9.00 to 10.50	.....	.....	.....	.....	27.00
Red	12.00 to 20.00	.....	.....	.....	.....	30.00
Maine:					
Brownsville, U'f'g Black, No. 1	12.00	.....	.....	.....	.....	.....
Slaters' felt, 30 lb. roll	0.92	.....	.....	.....	.....	3.00
Slaters' felt, 40 lb. roll	1.22	.....	.....	.....	.....	3.25
STRUCTURAL STEEL					
Beams and channel, 3 to 15 in., per lb.		3.47	3.47	4.50 to 5.00	4.70 to 5.00	4.70
Beams and channel, over 15 in., per lb.		3.57	3.57	4.50 to 5.00	.....	.....
Angles, 3 to 6 in.		3.47	3.47	4.50 to 5.00	4.10	4.70
Zees and tees		3.57	3.47 to 3.52	.....	.....	.....
Steel bars, half extras, from mill		.....	.....	4.90	4.00	4.25
STUCCO					
In cloth, per ton (white, mixed)		22.50	20.50	.....	.....	.....
STUCCO BOARD					
Medium weight stucco board, plain, per thousand sq. ft.		42.50	65.00	.....	.....	60.00
Medium weight stucco board, creosoted, per thousand sq. ft.		50.00	70.00	.....	.....	.....
Heavy weight stucco board, plain, per thousand sq. ft.		55.00	75.00	.....	.....	.....
Heavy weight stucco board, creosoted, per thousand sq. ft.		60.00	80.00	.....	.....	.....
Medium weight stucco board, plain, narrow key, per thousand sq. ft.		50.00	75.00	.....	.....	.....
Medium weight stucco board, narrow key, creosoted, per thousand sq. ft.		55.00	70.00	.....	.....	.....
Insulating board, heavy felt background, per thousand sq. ft.		50.00	70.00	.....	.....	.....
SHEATHING BOARD					
Heavy weight, sheathing board, per thousand sq. ft.		50.00	70.00	.....	.....	65.00
Medium weight sheathing board, per thousand sq. ft.		46.00	63.00	.....	.....	.....
Stucco or plaster board, sheathing board and insulating board are in rolls containing one sheet 25 ft. long and 4 ft. wide (100 sq. ft.).						
WALL BOARD					
Wall board, shipped any length, 4 ft. wide, per thousand		45.00	50.00	.....	65.00	53.00
Packed flat in cars if ordered in less than car lots. Add $5.00 per thousand ft. for crating.						